Kathleen Fuller Access DB# KH209

# SEARCH REQUEST FORM

**Scientific and Technical Information Center**

Requester's Full Name: Laura Weyer Examiner #: 7174 Date: 9/29/05
Art Unit: 1714 Phone Number 30-2-1294 Serial Number: 10/683,372
Mail Box and Bldg/Room Location: 6B83 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

**********

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See Front Page

Inventors (please provide full names):

Earliest Priority Filing Date:

***For Sequence Searches Only*** *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Could you search for a liquid electrolyte comprising a solvent containing a γ-butyrolactone and a macromonomer material having the structure $-(CH_2-CH_2-O)_n-$ where $n \geq 1$,

Thanks

Laura

**********

| STAFF USE ONLY | Type of Search | | Vendors and cost where applicable | |
|---|---|---|---|---|
| Searcher: K. Fuller | NA Sequence (#) | | STN | ✓ |
| Searcher Phone #: | AA Sequence (#) | | Dialog | |
| Searcher Location: | Structure (#) | 2 | Questel/Orbit | |
| Date Searcher Picked Up: | Bibliographic | | Dr.Link | |
| Date Completed: 9/15/05 | Litigation | | Lexis/Nexis | |
| Searcher Prep & Review Time: 30 | Fulltext | | Sequence Systems | |
| Clerical Prep Time: | Patent Family | | WWW/Internet | |
| Online Time: 34 | Other | | Other (specify) | |

PTO-1590 (8-01)

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**********

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Experimental and calculated property data are now available. For more
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=> FILE HCAPLU
FILE 'HCAPLUS' ENTERED AT 10:42:18 ON 16 SEP 2005
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FILE COVERS 1907 - 16 Sep 2005 VOL 143 ISS 13
FILE LAST UPDATED: 15 Sep 2005 (20050915/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

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=> D QUE
L5            1 SEA FILE=REGISTRY ABB=ON  BUTYROLACTONE/CN
L6            1 SEA FILE=REGISTRY ABB=ON  "POLYETHYLENE OXIDE"/CN
L7        15837 SEA FILE=HCAPLUS ABB=ON  L5 OR BUTYROLACTONE
L8        84653 SEA FILE=HCAPLUS ABB=ON  L6
L9          321 SEA FILE=HCAPLUS ABB=ON  L7 AND L8
L11        2202 SEA FILE=HCAPLUS ABB=ON  L7(L)ELECTROLYT?
L13           4 SEA FILE=HCAPLUS ABB=ON  L11(L)L8
L15         140 SEA FILE=HCAPLUS ABB=ON  L9 AND ELECTROLYT?
L16          97 SEA FILE=HCAPLUS ABB=ON  L15 AND BATTER?
L17        2675 SEA FILE=HCAPLUS ABB=ON  L8(L)DEV/RL
L18          61 SEA FILE=HCAPLUS ABB=ON  L17 AND L16
L19        1588 SEA FILE=HCAPLUS ABB=ON  L7(5A)SOLVENT#
L21           6 SEA FILE=HCAPLUS ABB=ON  L18 AND L19
L22           9 SEA FILE=HCAPLUS ABB=ON  L13 OR L21
L23        7685 SEA FILE=HCAPLUS ABB=ON  POLYMER(4A)ADDITIV?
L24           1 SEA FILE=HCAPLUS ABB=ON  L18 AND L23
L25           1 SEA FILE=HCAPLUS ABB=ON  L16 AND L23
L26           9 SEA FILE=HCAPLUS ABB=ON  L22 OR L24 OR L25
L27          47 SEA FILE=HCAPLUS ABB=ON  L7 AND POLYETHYLENE OXIDE
L28          30 SEA FILE=HCAPLUS ABB=ON  L27 AND ELECTROLYT?
L29          20 SEA FILE=HCAPLUS ABB=ON  L28 AND BATTER?
L30          26 SEA FILE=HCAPLUS ABB=ON  L26 OR L29


=> D L30 BIB ABS IND HITSTR 1-26

L30  ANSWER 1 OF 26  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2005:96153  HCAPLUS
DN   142:159585
TI   Secondary nonaqueous electrolyte battery
IN   Inada, Shusuke; Yajima, Toru; Fukui, Asuka; Sato, Asako; Matsumoto,
     Koichi; Endo, Shota; Sato, Kazuya
PA   Toshiba Corp., Japan
SO   Jpn. Kokai Tokkyo Koho, 15 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     --------------      ----   --------    --------------------   --------
PI   JP 2005032549        A2    20050203    JP 2003-195977         20030711
PRAI JP 2003-195977                20030711
AB   The battery uses an anode containing poly(ethylene glycol) and/or
     poly(ethylene oxide), having number average mol. weight 5000-1,000,000, at 0.2-3%
     the weight of the battery electrolyte.  Preferably, the
     electrolyte contains cyclic carbonate and γ-
     butyrolactone.
IC   ICM  H01M004-02
     ICS  H01M004-62; H01M010-40
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST   secondary nonaq battery anode polyethylene glycol;
     polyethylene oxide secondary nonaq battery
     anode
IT   Battery anodes
        (carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene
        oxide) for secondary lithium batteries)
IT   Carbon fibers, uses
     RL: DEV (Device component use); USES (Uses)
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(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT 9004-32-4, CMC 25322-68-3, Poly(ethylene glycol)
RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

L30 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:943678 HCAPLUS
DN 142:180347
TI Gel-type polymer **electrolyte** and lithium **battery** employing the **electrolyte**
IN Bae, Jin Yeong; Doo, Seok Gwang; Hwang, Seung Sik; Kim, Han Su; Kim, Jin Hwan
PA Samsung SDI Co., Ltd., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI KR 2003017945 | A | 20030304 | KR 2001-51589 | 20010825 |
| PRAI KR 2001-51589 | | 20010825 | | |

AB A gel-type polymer **electrolyte**, a lithium **battery** employing the **electrolyte** and their preparation methods are provided, to improve the ion conductivity and the organic **electrolyte** solution protecting property at a room and high temperature The gel-type polymer **electrolyte** comprises 10-60 wt% of a product obtained by the crosslinking reaction of polyethylene glycol and an epoxy compound; 10-70 wt% of a softening agent polymer; 20-90 wt% of an organic **electrolyte** solution which comprises a lithium salt and an organic solvent and is mixed with the cross-linked product uniformly; and optionally 5-40 wt% of a ceramic filler. Preferably the softening agent polymer is at least one selected from the group consisting of polyvinylidene fluoride, vinylidene fluoride-hexafluoropropylene copolymer, poly(vinyl chloride), polysulfone, polymethacrylate, polyolefin, **polyethylene oxide**, polyurethane, poly(vinyl alc.) and polyacrylonitrile; the organic solvent is at least one selected from the group consisting of ethylene carbonate, propylene carbonate, di-Me carbonate, di-Et carbonate, ethylmethyl carbonate, THF and γ- **butyrolactone**; the lithium salt is selected from the group consisting of LiAsF6, LiPF6, LISCN, LIClO4, LiBF4, LiCF3SO3, LiN(CF3SO2)2 and LiC(CF3SO2)3; and the ceramic filler is at least one selected from the group consisting of silica, alumina, lithium aluminate and zeolite.

IC ICM H01M004-60
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST gel type polymer **electrolyte** lithium **battery** employing **electrolyte**

IT Fillers
(ceramic; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(epoxy-, graft, polyethylene glycol- containing; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Zeolites (synthetic), uses
RL: DEV (Device component use); USES (Uses)
(filler; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Ceramics
(fillers; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT **Battery electrolytes**
Plasticizers
Polymer **electrolytes**
(gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Drug delivery systems
(gels; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(halo; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Ionic conductivity
(improved; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Secondary **batteries**
(lithium, gel polymer **electrolytes** for; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Polyolefins
Polysulfones, uses
Polyurethanes, uses
RL: DEV (Device component use); USES (Uses)
(plasticizer; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(polymers, plasticizer; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT Epoxy resins, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, graft, polyethylene glycol- containing; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 37220-89-6, Lithium aluminate

RL: DEV (Device component use); USES (Uses)
(filler; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

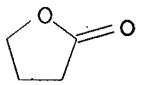
IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7 109-99-9, Tetrahydrofuran, uses 556-65-0, Lithium thiocyanate 616-38-6 623-53-0, Ethylmethyl carbonate 7791-03-9 14283-07-9, Lithium tetrafluoroborate 21324-40-3 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 132843-44-8, Lithium bis(pentafluoroethanesulfonyl)imide
RL: DEV (Device component use); USES (Uses)
(gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT 25322-68-3D, Polyethylene glycol, reaction products with epoxy compds.
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT 9002-86-2, Polyvinyl chloride 9002-89-5, Polyvinyl alcohol 9011-17-0, Vinylidene difluoride-hexafluoropropylene copolymer 24937-79-9, Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile 25087-26-7D, Poly(methacrylic acid), derivs. 25322-68-3, **Polyethylene oxide**
RL: DEV (Device component use); USES (Uses)
(plasticizer; gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(gel type polymer **electrolyte** and lithium **battery** employing **electrolyte**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:938456 HCAPLUS
DN 142:117458
TI LiFePO4/polymer/natural graphite: low cost Li-ion **batteries**
AU Zaghib, K.; Striebel, K.; Guerfi, A.; Shim, J.; Armand, M.; Gauthier, M.
CS Institut de Recherche d'Hydro-Quebec, QC, J3X 1S1, Can.
SO Electrochimica Acta (2004), 50(2-3), 263-270
CODEN: ELCAAV; ISSN: 0013-4686
PB Elsevier B.V.
DT Journal
LA English
AB The aging and performance of natural graphite/PEO-based gel **electrolyte**/LiFePO4 cells are reported. The gel polymer **electrolytes** were produced by electron-beam irradiation and then soaked in a liquid **electrolyte**. The natural graphite anode in gel **electrolyte** containing LiBF4-EC/GBL exhibited high reversible capacity (345 mAh/g) and high coulombic efficiency (91%). The LiFePO4 cathode in the same gel-polymer exhibited a reversible capacity of 160 mAh/g and 93% coulombic efficiency. Better performance was obtained at high-rate

discharge with 6% carbon additive in the cathode, however the graphite anode performance suffers at high rate. The Li-ion gel polymer **battery** shows a capacity fade of 13% after 180 cycles and has poor performance at low temperature due to low diffusion of the lithium to the graphite in the GBL system. The LiFePO4/gel/Li system has an excellent rate capacity. LiFePO4 cathode material is suitable for HEV application.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 72, 76

ST gel polymer **electrolyte** graphite Lithium **battery** anode discharge capacity; solvent effect lactone carbonate lithium secondary **battery** cycling impedance; iron lithium phosphate composite cathode polymer **electrolyte** discharge capacity

IT **Battery** anodes
**Battery** cathodes
Gels
(LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Carbon fibers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(Petoca, modifier for composite anode; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Carbon black, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(Shawinigan; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Electric energy
(discharge capacity of half-cells and assembled **batteries**; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Cathodic polarization
(discharge potential profiles; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Pressure
(effect on reversible and irreversible electrode capacities; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Polymer **electrolytes**
(gel; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Electric resistance
(interfacial; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Secondary **batteries**
(lithium; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Electric impedance
(of electrode half-cells; LiFePO4/polymer/natural graphite and gel

polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT Polymerization
(radiochem.; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 7439-93-2, Lithium, uses 7440-50-8, Copper, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 7782-42-5P, Graphite, uses
RL: DEV (Device component use); PRP (Properties); PUR (Purification or recovery); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(Natural, composite anodes with PVDF; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 24937-79-9, PVDF
RL: DEV (Device component use); USES (Uses)
(composite anodes with graphite, cathodes with carbon black/FeLiPO4; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 15365-14-7, Iron lithium phosphate (FeLiPO4)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(composite cathodes with PVDF/carbon black; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(dis; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 17341-24-1D, PEO complexes, uses
RL: DEV (Device component use); USES (Uses)
(gel polymer **electrolytes** with organic solvents and PEO; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 105-58-8, Diethyl carbonate 2832-49-7, N,N,N',N'-Tetraethylsulfamide
RL: DEV (Device component use); USES (Uses)
(gel polymer **electrolytes** with organic solvents/PEO/lithium salts; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 14283-07-9
RL: DEV (Device component use); USES (Uses)
(gel polymer **electrolytes** with organic solvents/PEO; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate
RL: DEV (Device component use); USES (Uses)
(gel polymer **electrolytes** with organic **solvents** /lithium salts/PEO; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT **25322-68-3D**, PEO, lithium ion complexes
RL: **DEV (Device component use)**; USES (Uses)
(gel polymer **electrolytes** with organic solvents/lithium salts; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

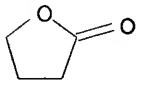
IT **25322-68-3DP**, PEO, crosslinked, lithium ion complexes
RL: **DEV (Device component use)**; SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)
(gel polymer **electrolytes** with organic solvents/lithium salts; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

IT 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
RL: DEV (Device component use); USES (Uses)
(salt in polymer gel **electrolyte**; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

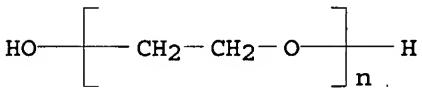
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(gel polymer **electrolytes** with organic **solvents**/lithium salts/PEO; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



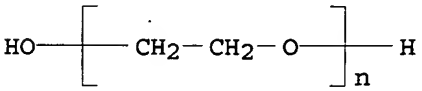
IT **25322-68-3D**, PEO, lithium ion complexes
RL: **DEV (Device component use)**; USES (Uses)
(gel polymer **electrolytes** with organic solvents/lithium salts; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



IT **25322-68-3DP**, PEO, crosslinked, lithium ion complexes
RL: **DEV (Device component use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(gel polymer **electrolytes** with organic solvents/lithium salts; LiFePO4/polymer/natural graphite and gel polymer **electrolyte** for use in low cost Li-ion **batteries**)

RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

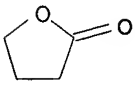
L30 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:843679 HCAPLUS
DN 141:426229

TI Polymer **electrolyte** for lithium secondary **battery**
IN Lim, Mi Ra; Lee, Seung Yeun
PA Lg Chemicals Co., Ltd, S. Korea
SO Repub. Korea, No pp. given
CODEN: KRXXFC
DT Patent
LA Korean
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | KR 147106 | B1 | 19980915 | KR 1995-30963 | 19950920 |
| PRAI | KR 1995-30963 | | 19950920 | | |

AB A high polymer **electrolyte** of a lithium secondary **battery** is provided to improve an ion conductivity at a low temperature and to increase a discharge capacity. A lithium secondary **battery** comprises a complex anode, a high polymer **electrolyte**, a cathode, an anode collector plate and a cathode collection plate. The high polymer electrolysis is formed by mixing two or more materials selected from a group of dimethoxyethane, diethylphthalate (DEP), gamma-**butyrolactone**, N-methylpyrolidone, and 2-Me THF, with a **polyethylene oxide** (PEO) containing a lithium salt.

IC ICM H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST polymer **electrolyte** lithium secondary **battery** **polyethylene oxide** salt complex
IT Plates
(current collectors; polymer **electrolyte** for lithium secondary **battery**)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(lithium complexes, in polymer **electrolyte**; polymer **electrolyte** for lithium secondary **battery**)
IT Secondary **batteries**
(lithium, polymer **electrolytes** for; polymer **electrolyte** for lithium secondary **battery**)
IT **Battery electrolytes**
Polymer **electrolytes**
Solid **electrolytes**
(polymer **electrolyte** for lithium secondary **battery**)
IT 17341-24-1D, complexes with **polyethylene oxide**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(in polymer **electrolytes**; polymer **electrolyte** for lithium secondary **battery**)
IT 84-66-2, Diethylphthalate 96-47-9, 2-Methyl tetrahydrofuran **96-48-0** 110-71-4 872-50-4, N-Methylpyrrolidone, uses 7439-93-2D, Lithium, salts
RL: DEV (Device component use); USES (Uses)
(polymer **electrolyte** for lithium secondary **battery**)
IT 25322-68-3D, **Polyethylene oxide**, lithium complexes, in polymer **electrolyte**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polymer **electrolyte** for lithium secondary **battery**)
IT **96-48-0**
RL: DEV (Device component use); USES (Uses)
(polymer **electrolyte** for lithium secondary **battery**)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 5 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:433948 HCAPLUS
DN 140:426125
TI Coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes
IN Zaghib, Karim; Armand, Michel; Guerfi, Abdelbast; Perrier, Michel; Dupuis, Elisabeth; Charest, Patrick
PA Hydro-Quebec, Can.
SO PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DT Patent
LA French
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2004045007 | A2 | 20040527 | WO 2003-CA1739 | 20031113 |
| | WO 2004045007 | A3 | 20050609 | | |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| | CA 2411695 | AA | 20040513 | CA 2002-2411695 | 20021113 |
| | CA 2503893 | AA | 20040527 | CA 2003-2503893 | 20031113 |
| | EP 1573834 | A2 | 20050914 | EP 2003-775013 | 20031113 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| PRAI | CA 2002-2411695 | A | 20021113 | | |
| | WO 2003-CA1739 | W | 20031113 | | |

AB An electrode for an electrochem. cell (especially a **battery**) is prepared by coating at least partially the electrode with a film obtained by spreading and drying of an aqueous solution on the electrode support, in which the aqueous solution contains at least an active material, a water-soluble binder, and a water-soluble thickener. Suitable active materials are selected from finely divided (particle size 10-50 μ) metal oxides (e.g., $LiMn_2O_4$, $LiCoO_2$, $LiFePO_4$, $LiNiO_2$, $Li_4Ti_5O_{12}$, etc.), ceramics, carbon (including carbon fibers, synthetic graphite, and natural graphite), metals (e.g., Ag, Sn, and Cu), and semiconductors (especially Si). Suitable thickeners include natural and modified celluloses (e.g., CM-cellulose and hydroxymethyl cellulose); suitable binders include natural and synthetic rubber. Both anodes and cathodes can be prepared by this method. The method for electrode fabrication is especially useful for construction of secondary lithium **batteries** with nonaq. **electrolytes** and polymeric separators.
IC ICM H01M004-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** electrode coating carbon encapsulation; thickener binder

**battery** electrode coating
IT Ceramics
Semiconductor materials
(**battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Carbon fibers, uses
Coke
Metals, uses
Oxides (inorganic), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT EPDM rubber
Fluoropolymers, uses
Polyesters, uses
Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**battery** separators; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Acrylic rubber
Epichlorohydrin rubber
Natural rubber, uses
Nitrile rubber, uses
Styrene-butadiene rubber, uses
Synthetic rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
(binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT **Battery** anodes
**Battery** cathodes
**Battery** electrodes
Coating materials
(coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Nitrile rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
(hydrogenated, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Secondary **batteries**
(lithium **batteries**; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT **Battery electrolytes**
(nonaq.; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Secondary **battery** separators
(polymeric; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Polysaccharides, uses
RL: NUU (Other use, unclassified); USES (Uses)
(thickener, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT Tin alloy, base

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT 9004-32-4, Carboxymethyl cellulose
RL: NUU (Other use, unclassified); USES (Uses)
(Cellogen, thickener, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 12031-65-1, Lithium nickel oxide (LiNiO2) 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 12036-22-5, Tungsten oxide (WO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7, Iron lithium phosphate (FeLiPO4) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.5O2)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT 9002-84-0, Poly(tetrafluoroethene) 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-14-7, Poly(methyl methacrylate) 9011-17-0 24937-79-9, Poly(vinylidene fluoride) 25034-77-9, Ethylene-propylene-5-methylene-2-norbornene copolymer 25322-68-3, **Polyethylene oxide** 25322-69-4, Polypropylene oxide
RL: NUU (Other use, unclassified); USES (Uses)
(**battery** separators; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT 9003-18-3
RL: NUU (Other use, unclassified); USES (Uses)
(nitrile rubber, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

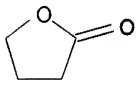
IT 9003-18-3
RL: NUU (Other use, unclassified); USES (Uses)
(nitrile rubber, hydrogenated, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 2832-49-7, N,N,N',N'-Tetraethylsulfamide 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, LiTFSI 171611-11-3 244761-29-3, Lithium bis(oxalato)borate
RL: NUU (Other use, unclassified); USES (Uses)
(secondary **battery** nonaq. **electrolytes**; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT 9003-55-8
RL: NUU (Other use, unclassified); USES (Uses)
(styrene-butadiene rubber, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)

IT 7429-90-5, Aluminum, uses 12597-68-1, Stainless steel, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(substrate, for **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of

**battery** electrodes)
IT 9004-34-6, Cellulose, uses 37353-59-6, Hydroxymethyl cellulose
RL: NUU (Other use, unclassified); USES (Uses)
(thickener, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
IT **96-48-0**, γ- **Butyrolactone**
RL: NUU (Other use, unclassified); USES (Uses)
(secondary **battery** nonaq. **electrolytes**; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

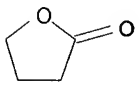


L30 ANSWER 6 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:872542 HCAPLUS
DN 139:352706
TI Lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property
IN Sano, Hiroki; Nishikawa, Satoshi; Honmoto, Hiroyuki; Omichi, Takahiro
PA Teijin Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2003317802 | A2 | 20031107 | JP 2002-122001 | 20020424 |
| PRAI JP 2002-122001 | | 20020424 | | |

AB The Li ion secondary **battery** comprises anode from Li-doping and undoping C material, cathode from Li-containing transition metal oxide, a separator, and a nonaq. **electrolyte**, wherein the separator is a composite membrane from polyethylene terephthalate nonwoven fabric and organic polymer swelling in the **electrolyte** and the organic solvent component of the **electrolyte** is ring-form carbonate solvent. The organic polymer is polyvinylidene fluoride, polyacrylonitrile, **polyethylene oxide** and/or PMMA type polymer , and the ring-form carbonate solvent contains propylene carbonate and/or γ-**butyrolactone** and ethylene carbonate.
IC ICM H01M010-40
ICS H01M002-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary **battery** safety polyethylene terephthalate fabric composite separator
IT Membranes, nonbiological
(composite, separator; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT Nonwoven fabrics
Safety
(lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)

IT Secondary **batteries**
(lithium; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of PET nonwoven fabric and; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of nonwoven fabric of; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 14283-07-9
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** containing; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT 25101-47-7, Chlorotrifluoroethylene-hexafluoropropylene-vinylidene fluoride copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(separator containing; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT 9011-14-7, PMMA 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, **Polyethylene oxide**
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of PET nonwoven fabric and; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT 25038-59-9, Polyethylene terephthalate, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of nonwoven fabric of; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
IT **96-48-0**, γ- **Butyrolactone**
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** containing; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 7 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:531595 HCAPLUS
DN 139:103745
TI Secondary nonaqueous **electrolyte battery**
IN Kono, Tatsuoki; Takami, Norio
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2003197257 | A2 | 20030711 | JP 2001-398106 | 20011227 |
| PRAI | JP 2001-398106 | | 20011227 | | |

AB The **battery** has an electrode stack, containing a separator between a cathode and an anode, and an nonaq. **electrolyte** solution; where the **battery** satisfies K = M/D = 1.2+103-9.8+107 [D = distance between 2 electrodes; M = area (mm2) of **battery** height + width]; and the **electrolyte** solution is a non-Newtonian fluid.

IC ICM H01M010-40
ICS H01M002-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** nonaq **electrolyte** nonnewtonian fluid

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(anode; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

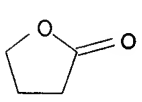
IT 111706-40-2, Cobalt lithium oxide (CoLi0-102)
RL: DEV (Device component use); USES (Uses)
(cathode; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 14283-07-9, Lithium tetrafluoroborate 25322-68-3, **Polyethylene oxide**
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT 9002-88-4, Polyethylene
RL: DEV (Device component use); USES (Uses)
(separator; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 8 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:945870 HCAPLUS
DN 138:26917
TI Nonaqueous **electrolyte** and secondary nonaqueous

**electrolyte battery**

IN Kono, Tatsuoki; Takami, Norio
PA Toshiba Corp., Japan

applicant

SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2002359000 | A2 | 20021213 | JP 2001-297422 | 20010927 |
| | US 2003049540 | A1 | 20030313 | US 2002-83372 | 20020227 |
| PRAI | JP 2001-94051 | A | 20010328 | | |
| | JP 2001-297422 | A | 20010927 | | |

AB The **electrolyte** solution has an salt dissolved in an solvent mixture, and a **polymer additive** in the solvent mixture; where the **electrolyte** solution is a non-Newtonian fluid with viscosity 7-30000 cp at 20°C. The ratio (p) of ion conductivity to viscosity ($\sigma/\eta$) in the **electrolyte** solution is < 0.1, the **solvent** mixture contains $\gamma$- **butyrolactone**, and the content of the polymer material of the formula (CH2CH2O)n is 0.01-10 % of the solvent mixture The **battery** has an active mass containing cathode, a Li intercalating anode and the above required **electrolyte** solution in between.

IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary **battery electrolyte** nonaq solvent **polymer additive**; nonaq **solvent butyrolactone polymer additive** content viscosity

IT **Battery electrolytes**
(Li salt **electrolyte** solns. containing **polymer additives** in $\gamma$- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(Li salt **electrolyte** solns. containing **polymer additives** in $\gamma$- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(anode; Li salt **electrolyte** solns. containing **polymer additives** in $\gamma$- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

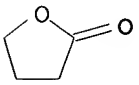
IT Secondary **batteries**
(lithium; Li salt **electrolyte** solns. containing **polymer additives** in $\gamma$- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

IT **96-48-0**, $\gamma$- **Butyrolactone** 96-49-1, Ethylene carbonate 14283-07-9, Lithium tetrafluoroborate **25322-68-3**, **Polyethylene oxide**
RL: **DEV (Device component use)**; USES (Uses)
(Li salt **electrolyte** solns. containing **polymer additives** in $\gamma$- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

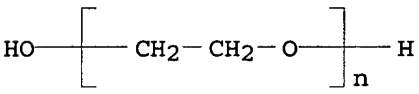
IT 111706-40-2, Cobalt lithium oxide (CoLiO-1O2)
RL: DEV (Device component use); USES (Uses)
(cathode; Li salt **electrolyte** solns. containing **polymer additives** in γ- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

IT **96-48-0**, γ- **Butyrolactone** **25322-68-3**, **Polyethylene oxide**
RL: **DEV (Device component use)**; USES (Uses)
(Li salt **electrolyte** solns. containing **polymer additives** in γ- **butyrolactone solvent** mixts. with controlled viscosity for secondary lithium **batteries**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 9 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:833355 HCAPLUS
DN 137:327466
TI Polymeric gel **electrolyte** for lithium **battery**
IN Choi, Young-Min; Kang, Byoung-Hyun; Kim, Jin-Kyoung
PA S. Korea
SO U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

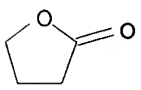
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 2002160269 | A1 | 20021031 | US 2002-131521 | 20020425 |
| | KR 2002083117 | A | 20021101 | KR 2002-8116 | 20020215 |
| | CN 1382746 | A | 20021204 | CN 2002-2107597 | 20020318 |
| | JP 2003017128 | A2 | 20030117 | JP 2002-126912 | 20020426 |
| | JP 3571032 | B2 | 20040929 | | |
| PRAI | KR 2001-22674 | A | 20010426 | | |
| | KR 2002-8116 | A | 20020215 | | |

AB A polymeric gel **electrolyte** and a lithium **battery** employing the same are disclosed. The polymeric gel **electrolyte** includes a first ionic conductive polymer having a weight-average mol. weight of greater than or equal to 5000 and smaller than 100,000, a second ionic conductive polymer having a weight-average mol. weight of 100,000 to 5,000,000, and an **electrolytic** solution that includes a lithium salt and an organic solvent. The first ionic conductive polymer preferably is at least one

polymer selected from polyethyleneglycol di-Me ether, polyethyleneglycol di-Et ether, polyethyleneglycol dimethacrylate, polyethyleneglycol diacrylate, polypropyleneglycol dimethacrylate, polypropyleneglycol diacrylate, and mixts. and combinations thereof, and the second ionic conductive polymer preferably is at least one polymer selected from polyvinylidene fluoride, polyvinylidene fluoride-hexafluoropropylene copolymer, polyurethane, **polyethylene oxide**, polyacrylonitrile, polymethylmethacrylate, polyacrylamide, polyacetate, and mixts. and combinations thereof.

IC ICM H01M010-40
INCL 429303000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer gel **electrolyte** lithium **battery**
IT Secondary **batteries**
(lithium; polymeric gel **electrolyte** for lithium **battery**)
IT **Battery electrolytes**
Conducting polymers
(polymeric gel **electrolyte** for lithium **battery**)
IT Fluoropolymers, uses
Polyesters, uses
Polyoxyalkylenes, uses
Polyurethanes, uses
RL: DEV (Device component use); USES (Uses)
(polymeric gel **electrolyte** for lithium **battery**)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(mesocarbon microbeads; polymeric gel **electrolyte** for lithium **battery**)
IT 75-05-8, Acetonitrile, uses **96-48-0**, γ-**Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 1469-73-4, Propylene sulfite 3741-38-6, Ethylene sulfite 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9002-88-4, Polyethylene 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 24991-55-7, Polyethylene glycol dimethyl ether 25014-41-9, Polyacrylonitrile 25038-59-9, Polyethylene terephthalate, uses 25322-68-3, **Polyethylene oxide** 25721-76-0, Polyethylene glycol dimethacrylate 25852-49-7, Polypropylene glycol dimethacrylate 28158-16-9, 2-Propenoic acid, 1,2-ethanediyl ester, homopolymer 31073-72-0, Acetic acid, homopolymer 33454-82-9, Lithium triflate 52496-08-9, Polypropylene glycol diacrylate 53609-62-4, Polyethylene glycol diethyl ether 73506-93-1, Diethoxyethane 90076-65-6
RL: DEV (Device component use); USES (Uses)
(polymeric gel **electrolyte** for lithium **battery**)
IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 105-58-8, Diethyl carbonate 109-99-9, Thf, uses 616-38-6, Dimethyl carbonate 872-50-4, n-Methylpyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; polymeric gel **electrolyte** for lithium **battery**)
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(polymeric gel **electrolyte** for lithium **battery**)
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



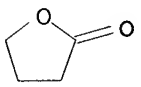
L30 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:209797 HCAPLUS
DN 132:224883
TI Preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors
IN Ishiko, Eriko; Kono, Michiyuki
PA Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan
SO Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 989620 | A2 | 20000329 | EP 1999-113354 | 19990709 |
| | EP 989620 | A3 | 20020306 | | |
| | EP 989620 | B1 | 20040128 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2000100246 | A2 | 20000407 | JP 1998-267999 | 19980922 |
| | US 6329103 | B1 | 20011211 | US 1999-353995 | 19990715 |
| | CA 2279309 | C | 20040106 | CA 1999-2279309 | 19990729 |
| | CA 2279309 | AA | 20000322 | | |
| PRAI | JP 1998-267999 | A | 19980922 | | |

AB A solid **electrolyte** is disclosed, which comprises a crosslinked product of an alkylene oxide polymer having a polymerizable double bond at the terminal and/or in the side chain, and an **electrolytic** salt. In this, the alkylene oxide polymer is thermally crosslinked in the presence of an organic peroxide initiator having an activation energy of at most 35 Kcal/mol and having a half-value period of 10 h at a temperature not higher than 50°.

IC ICM H01M006-18
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 74, 76
ST polymer **electrolyte battery**; capacitor polymer **electrolyte**; electrochromic device polymer **electrolyte**; sensor polymer **electrolyte**
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(acrylate-terminated; preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(derivative, acryloyl- or methacryloyl-terminated; preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(methacryloyl-terminated; preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and

sensors)
IT **Battery electrolytes**
Capacitors
Electrochromic devices
Polymer **electrolytes**
Sensors
(preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)
IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 25322-68-3D, **Polyethylene oxide**, derivative, acryloyl- or methacryloyl-terminated 33454-82-9, Lithium triflate 90076-65-6
RL: DEV (Device component use); USES (Uses)
(preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:166259 HCAPLUS
DN 132:210209
TI Secondary nonaqueous-**electrolyte batteries** with **electrolytes** containing cyanoethoxy compounds
IN Kobayashi, Aya; Izuchi, Shuichi
PA Yuasa Battery Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2000077096 | A2 | 20000314 | JP 1998-244674 | 19980831 |
| PRAI JP 1998-244674 | | 19980831 | | |

OS MARPAT 132:210209
AB Claimed **batteries** are equipped with **electrolytes** containing cyanoethoxy compds. R(OC2H4CN)n (n = 1-4; R = CmH2m+2-n, CmH2m+2-n(OC2H4)p, CmH2m+2-nCO, or CmH2m+2-nOCO; m = 1-3; p = 1-4) as nonaq. solvents for Li salts. Optionally, the **batteries** are equipped with gelled polymer **electrolytes**. The **batteries** have long cycle life at low temperature
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST cyanoethoxy compd nonaq **electrolyte** solvent **battery**; lithium **battery electrolyte** solvent cyanoethoxy compd
IT Secondary **batteries**

(lithium; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

IT **Battery electrolytes**
(nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(trifunctional acrylates, lithium complexes, gelled **electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

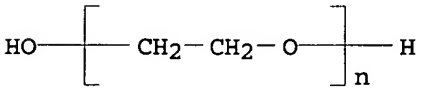
IT 14283-07-9, Lithium tetrafluoroborate
RL: DEV (Device component use); USES (Uses)
(**electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

IT **25322-68-3D**, Polyethylene glycol, trifunctional acrylates, lithium complexes
RL: **DEV (Device component use)**; USES (Uses)
(gelled **electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-67-8 1656-48-0, Bis-2-cyanoethyl ether 2141-62-0 3386-87-6 5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl carbonate 35633-51-3 260362-83-2
RL: DEV (Device component use); USES (Uses)
(**solvents**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

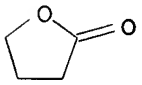
IT **25322-68-3D**, Polyethylene glycol, trifunctional acrylates, lithium complexes
RL: **DEV (Device component use)**; USES (Uses)
(gelled **electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)




IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(**solvents**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

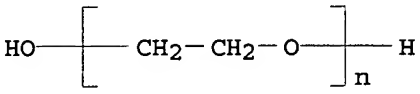


L30 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:499496 HCAPLUS
DN 131:288823
TI The measurement of self-diffusion coefficients of various species by the pulse gradient-field spin-echo NMR method. The motions of ions in the **electrolytes** for lithium **batteries**
AU Hayamizu, Kikuko; Aihara, Yuichi
CS Natl. Inst. Mater. Chem. Res., Tsukuba, 305-8565, Japan
SO Materia (1999), 38(7), 555-558
CODEN: MTERE2; ISSN: 1340-2625
PB Nippon Kinzoku Gakkai
DT Journal
LA Japanese
AB The title PGSE-NMR method was applied to the measurements of self-diffusion coefficient (D) of ions in the **electrolytes** for Li **batteries.** The NMR measurement nuclei were 7Li for Li+, 19F for N(SO2CF3)- and 1H for solvents used for the **batteries**, resp. The measured D values of 14 organic solvents and Li+ and N(SO2CF3)2- in their solvents were inversely proportional to the solvent viscosities according to the Stokes-Einstein equation. The D ratio of Li+ to the solvent was >2 in ethylene carbonate and γ- **butyrolactone**, indicating 2 mols. of the **solvents** can solvate Li+ and that for N(SO2CF3)2- was 1.2 in every solvents, indicating the less solvation to the anion. The molar elec. conds. of LiN(SO2CF3)2 evaluated from the D values in organic solvents using the Nernst-Einstein equation were different from those obtained by electrochem. a.c. method. The differences are attributed to the dissociation degrees of the **electrolyte.** The PGSE-NMR method was also applied to polymer **electrolyte** gels using poly(ethylene oxide) as a polymer matrix.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 65
ST lithium **battery electrolyte** ion motion; self diffusion coeff lithium **battery electrolyte**
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT **Battery electrolytes**
Electric conductivity
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT Diffusion
(self-; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT **25322-68-3**
RL: **DEV (Device component use)**; USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT **96-48-0** 96-49-1, Ethylene carbonate 108-29-2, γ-Valerolactone 108-32-7, Propylene carbonate 109-99-9, uses 110-71-4 111-96-6, Diglyme 112-49-2, Triglyme 123-91-1, 1,4-Dioxane, uses 616-38-6, Dimethyl carbonate 872-50-4, n-Methylpyrrolidone, uses 4437-85-8, Butylene carbonate
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 17341-24-1, Lithium(1+), processes 98837-98-0
RL: PEP (Physical, engineering or chemical process); PROC (Process)

(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)

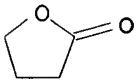
IT **25322-68-3**
RL: **DEV (Device component use)**; USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)

RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



IT **96-48-0**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:781401 HCAPLUS
DN 130:168955
TI Lithium ion conduction in PEO-salt electrolytes gelled with PAN
AU Choi, B. K.; Shin, K. H.; Kim, Y. W.
CS Department of Science Education, Dankook University, Seoul, 140-714, S. Korea
SO Solid State Ionics (1998), 113-115, 123-127
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB Hybrid solid electrolyte films consisting of poly(ethylene oxide) (PEO), LiClO4, a mixture of ethylene carbonate (EC) and γ-butyrolactone (BL) and polyacrylonitrile (PAN) were examined in order to obtain the best compromise between high conductivity, homogeneity and dimensional stability. Measurements of elec. conductivity and differential scanning calorimetry have been carried out. When the ratio of LiClO4/(EC/BL) is large, the electrolyte films are completely amorphous at room temperature and in the other cases, they are partially crystalline The materials having higher EC/BL content are more likely to be a gel-electrolyte than a plasticized PEO-salt electrolyte. The Li+ ions in these films seem to migrate primarily through the solvent domains as in the gel-electrolytes. The highest room temperature conductivity of 2.0+10-3 S cm-1 is found for a film of 31PEO-9LiClO4-50EC/BL-10PAN. This film has a similar conductivity value as compared with PAN-based gel electrolytes, but with a better dimensional stability.
CC 37-5 (Plastics Manufacture and Processing)
ST lithium ionic conduction polyethylene oxide polyacrylonitrile; ethylene

carbonate lithium ionic cond polyoxyethylene; butyrolactone lithium ionic cond polyoxyethylene; glass temp polyethylene oxide electrolyte

IT Glass transition temperature
Ionic conductivity
Melting point
Recrystallization
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)

IT Polyoxyalkylenes, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)

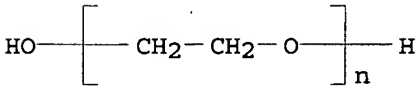
IT 7791-03-9, Lithium perchlorate
RL: MOA (Modifier or additive use); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)

IT 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butyrolactone-polyacrylonitrile electrolyte film)

IT 25014-41-9, Polyacrylonitrile **25322-68-3**, Poly(ethylene oxide)
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-**butyrolactone**-polyacrylonitrile **electrolyte** film)

IT **25322-68-3**, Poly(ethylene oxide)
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-**butyrolactone**-polyacrylonitrile **electrolyte** film)

RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:395225 HCAPLUS
DN 129:69855
TI Mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix
AU Aihara, Yuichi; Hayamizu, Kikuko; Arai, Shigemasa; Price, William S.
CS Res. Deve. Cent., Yuasa Corp., Takatsuki, Japan
SO Yuasa Jiho (1998), 84, 5-11
CODEN: YUJIAX; ISSN: 0513-6342
PB Yuasa Koporeshon
DT Journal
LA Japanese
AB The ionic conduction mechanism of gel **electrolytes** was studied

by using the AC impedance method, differential scanning calorimetry, and pulse field gradient (PFG) NMR method. The gel **electrolytes** based on the typical crosslinked poly(ethylene oxide) (PEO) system were obtained from polyethylene glycol diacrylate in the presence of LiF and γ- **butyrolactone.** The gel **electrolytes** were obtained as a thin film form by the radical polymerization method. This **electrolyte** has an ionic conductivity of 4.0 + 10-3 Scm-1 at 20° and good temperature properties. The diffusion coefficient was determined by using PFG-NMR. Comparison of data between δobs which was determined from the AC impedance method and δnmr which was determined by using Nernst-Einstein equation from diffusion coeffs. was considered. DSC curves showed several exothermic peaks as the different state of the solvent. Macroscopic homogeneity of the gel was confirmed for the samples of different salt concns. The ionic conductivity, diffusion coefficient and DSC data indicated interaction between the polymer and lithium cations in the gel system with a high solvent content. The ionic conduction mechanism as related to the gel structure in the PEO-gel system is proposed, and the difference of the ion existence between gels and liquid **electrolytes** was discussed.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST **battery** gel **electrolyte** ionic conduction; **polyethylene oxide** gel **electrolyte** ionic cond

IT **Battery electrolytes**
Diffusion
Ionic conductivity
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

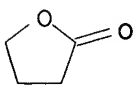
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

IT 25322-68-3, Peo 26570-48-9, Polyethylene glycol diacrylate
RL: DEV (Device component use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

IT **96-48-0**, γ- **Butyrolactone** 7789-24-4, Lithium fluoride, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

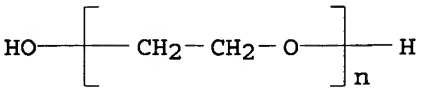
IT **96-48-0**, γ- **Butyrolactone**
RL: TEM (Technical or engineered material use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:135022 HCAPLUS
DN 128:271140
TI Diffusion, conductivity and DSC studies of a polymer gel electrolyte composed of cross-linked PEO, γ-butyrolactone and LiBF4

AU Hayamizu, Kikuko; Aihara, Yuichi; Arai, Shigemasa; Price, William S.
CS National Institute of Materials and Chemical Research, 1-1 Higashi, Tsukuba, 305, Japan
SO Solid State Ionics (1998), 107(1,2), 1-12
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB The gel electrolyte system composed of γ-butyrolactone (GBL), LiBF4, and crosslinked acrylated poly(ethylene oxide) (PEO) with a mol. weight of 4000 (PEO4) was studied using the pulsed field gradient (PFG) NMR method to measure the diffusion coeffs. The NMR spin-lattice relaxation times, ionic conductivities and thermal behavior were also measured. Seven reference samples were also prepared pure GBL (sample A), 0.5, 1 and 1.5 M LiBF4 in GBL (i.e., solution electrolyte; samples B-D), 20 weight% PEO4 in GBL (sample E), 1 M LiBF4 plus 20 weight% PEO4 in GBL (sample F) and a gel without the salt (sample G), in addition to three gel electrolyte samples containing 0.5, 1, and 1.5 M concns. of LiBF4 in GBL with 20 weight% crosslinked PEO4 (samples H-J). Importantly, using 1H, 7Li, and 19F PFG NMR the diffusion coeffs. of all the species present were able to be measured. The diffusion coeffs. were sensitive to the salt concentration and the crosslinking of the polymer. The Li and BF4 ions are solvated with GBL even in the gel state. The deviation of the measured conductivities from the values calculated using the Nernst-Einstein equation reflects the effects of ion association It was observed that at least, at low salt concns., the polymer aids in the dissociation of the salt. By considering all of the exptl. data obtained, we show that in the gel system the BF4 ions exist predominantly in the solvent while the motion of the Li ions, although solvated in GBL, is strongly associated with the polymer. From the combination of the conductivity and diffusion measurements we were able to obtain values for the dissociation consts. for the salt dissolved in the GBL and in the gel samples.
CC 37-5 (Plastics Manufacture and Processing)
ST polyoxyethylene butyrolactone lithium tetrafluoroborate property; diffusion polyoxyethylene butyrolactone lithium tetrafluoroborate; ionic cond polyoxyethylene butyrolactone lithium tetrafluoroborate
IT Diffusion
Glass transition temperature
Ionic conductivity
Spin-lattice relaxation
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene oxide)-butyrolactone-LiBF4 gel electrolyte)
IT Polyoxyalkylenes, properties
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene oxide)-butyrolactone-LiBF4 gel electrolyte)
IT 96-48-0, γ-Butyrolactone 14283-07-9, Lithium tetrafluoroborate
**25322-68-3**, Poly(ethylene oxide)
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene oxide)-**butyrolactone**-LiBF4 gel **electrolyte**)
IT **25322-68-3**, Poly(ethylene oxide)
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene oxide)-**butyrolactone**-LiBF4 gel **electrolyte**)
RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

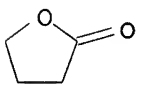
L30 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1997:283977 HCAPLUS
DN 126:280321
TI Lithium **batteries** using lithium perchlorate
IN Aihara, Juichi
PA Yuasa Battery Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 09063648 | A2 | 19970307 | JP 1995-221606 | 19950830 |

PRAI JP 1995-221606 19950830

AB The **batteries** use gel **electrolytes** containing polymer solid **electrolytes** and organic solvents, and the concentration of the **electrolytes** enables LiClO4 to dissolve even after removal of the organic solvents. Although the **batteries** use dangerous LiClO4, the **electrolytes** contribute to safety.

IC ICM H01M010-40
ICS H01M010-40; H01M006-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** gel **electrolyte** safety; perchlorate lithium polymer solid **electrolyte battery**
IT **Battery electrolytes**
(Li **batteries** using lithium perchlorate and gel **electrolytes** for safety)
IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(Li **batteries** using lithium perchlorate and gel **electrolytes** for safety)
IT **96-48-0**, γ- **Butyrolactone** 25322-68-3D, **Polyethylene oxide**, acrylate esters
RL: DEV (Device component use); USES (Uses)
(**electrolyte** component; Li **batteries** using lithium perchlorate and gel **electrolytes** for safety)
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(**electrolyte** component; Li **batteries** using lithium perchlorate and gel **electrolytes** for safety)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

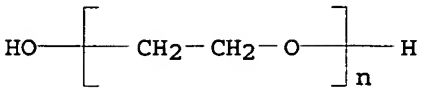


L30 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1997:61157 HCAPLUS
DN 126:77522
TI Gel electrolytes for lithium batteries
IN Aihara, Juichi
PA Yuasa Battery Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 08298126 | A2 | 19961112 | JP 1995-104489 | 19950428 |
| PRAI | JP 1995-104489 | | 19950428 | | |

AB The gel electrolytes are composed of a mixture containing a polymer and an organic electrolyte solution containing γ-butyrolactone and cyclic (carbonate) esters. The gel may be formed by crosslinking between the polymer and the ester containing ethylene oxide or propylene oxide units. The electrolytes have good low-temperature properties.

IC ICM H01M006-22
ICS C08F299-02; C08K005-101; C08L071-02; H01M006-16; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST battery gel electrolyte polymer ester butyrolactone
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(trifunctional acrylate; γ-butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)
IT Battery electrolytes
(γ-butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)
IT Lactones
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(γ-butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)
IT 463-79-6D, Carbonic acid, esters, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(cyclic; γ-butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)
IT 96-48-0, γ-Butyrolactone
RL: DEV (Device component use); USES (Uses)
(γ-butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)
IT **25322-68-3D**, trifunctional acrylate 106392-12-5, Ethylene oxide-propylene oxide block copolymer
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(γ- **butyrolactone** containing gel **electrolytes** from polymers and cyclic esters for lithium batteries)
IT **25322-68-3D**, trifunctional acrylate
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(γ- **butyrolactone** containing gel **electrolytes** from polymers and cyclic esters for lithium batteries)
RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:483502 HCAPLUS
DN 125:119517
TI **Batteries** comprising porous negative and positive electrodes and liquid and solid **electrolyte**, and their manufacture
IN Bronoel, Guy
PA Laboratoires Sorapec, Fr.
SO Fr. Demande, 13 pp.
CODEN: FRXXBL
DT Patent
LA French
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| FR 2727246 | A1 | 19960524 | FR 1994-13760 | 19941117 |
| PRAI FR 1994-13760 | | 19941117 | | |

AB In the **batteries**, comprising ≥1 porous neg. electrodes that may be intercalated with ≥1 alkali metals or alkaline earth metals, and ≥1 porous pos. electrodes comprising ≥1 active compds. that may contain the ions of the ≥1 alkali metals or alkaline earth metals, the internal and external surface of the neg. and/or pos. electrode is coated with a film of solid **electrolyte**, and the space remaining between, and in the pores of, the electrodes is filled with a liquid **electrolyte.** In the manufacture of the **batteries**, the neg. and/or pos. electrode is coated with a solution of the solid **electrolyte**, and the solvent removed. This method prevents degradation of the liquid **electrolyte**, especially at elevated temps., permits operation at a c.d. close to that of **batteries** containing a liquid **electrolyte**, increases elec. efficiency, and decreases dendrite growth. The **batteries** are suitable for use in elec. vehicles. A **battery** was manufactured using PWB3 (carbon fiber textiles) for the neg. electrodes, and the pos. electrodes were manufactured by introducing 3 g of a mixture consisting of V2O5 powder 60, carbon black 20, (CF3SO2)2NLi powder 17, and PTFE powder 3 weight% into a cellular NI plate. The separators consisted of nonwoven polypropene, and the assembly was immersed in an acetonitrile solution containing 3 weight% **polyethylene oxide** (mol. weight 5 + 106) and 4 weight% (CF3SO2)2NLi.

IC ICM H01M004-24
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **battery** porous electrode coating; PWB3 carbon fiber textile neg electrode; vanadium pentoxide porous pos electrode; PTFE powder porous pos electrode; **polyethylene oxide** porous pos electrode; **electrolyte** porous electrode; acetonitrile porous electrode coating; lithium trifluoromethanesulfonate imide **electrolyte**
IT Polyethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)
IT **Batteries**, secondary
(porous neg. and pos. electrodes and liquid and solid **electrolyte** for)
IT Coating materials
(solid **electrolytes**; porous neg. and pos. electrodes and liquid

and solid **electrolyte** for secondary **batteries**)

IT Electrodes
(**battery**, porous, porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT **Electrolytes**
(solid, coating; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT Carbon fibers
(textiles, neg. electrodes; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 1314-62-1, Vanadium pentoxide, uses 12037-42-2, Vanadium oxide (V6O13) 39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt lithium oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(cellular metal pos. electrodes containing; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 25322-68-3, **Polyethylene oxide**
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(neg. electrode; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 2169-38-2, Lithium tetramethylborate 14485-20-2, Lithium tetraphenylborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
RL: TEM (Technical or engineered material use); USES (Uses)
(porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 11105-45-6
RL: TEM (Technical or engineered material use); USES (Uses)
(porous, pos. electrodes; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

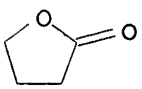
IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6
RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolyte** films containing; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 68-12-2, DMF, uses **96-48-0**, **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 646-06-0, Dioxolane
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT **96-48-0**, **Butyrolactone**
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:273818 HCAPLUS
DN 124:327255
TI Gelled **electrolyte** with good mechanical strength
IN Osada, Manabu; Akashi, Hiroyuki; Takemori, Shinichi; Sekai, Koji; Ozawa, Hitoshi; Nakajima, Kaoru; Karashima, Shuichi
PA Sumitomo Seika KK, Japan; Sumitomo Seika Chemicals Co., Ltd.; Sony Corp.
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 08064028 | A2 | 19960308 | JP 1994-203249 | 19940829 |
| | JP 3481685 | B2 | 20031222 | | |
| PRAI | JP 1994-203249 | | 19940829 | | |

AB The **electrolyte** is obtained by treating a polyalkylene oxide with weight average mol. weight 1000-1,000,000, a polyol, and an isocyanate compound in the presence of an amine- and/or Sn-containing catalyst, molding 100 parts of the resulting water-absorbing thermoplastic polymer and 0.1-20 parts of inorg. oxide, irradiating with 5-500-kGy electron beam, and impregnating with a solution containing an **electrolyte** and a nonaq. organic solvent. The **electrolyte** is useful for Li **batteries**, electrochem. devices, etc. The **electrolyte** showed high gel strength and good ionic conductivity

IC ICM H01B001-06
ICS C08G018-48; C08L075-08; H01M006-18
CC 72-3 (Electrochemistry)
Section cross-reference(s): 38, 52
ST polyalkylene polyurethane blend oxide **electrolyte**; electron beam crosslinking polyalkylene polyurethane **electrolyte**
IT Absorbents
(for water; gelled **electrolyte** containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)
IT **Battery electrolytes**
Crosslinking
Electron beam
Gels
(gelled **electrolyte** containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)
IT **Electrolytes**
(manufacture of gelled **electrolyte** with good mech. strength)
IT Urethane polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, gelled **electrolyte** containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)
IT 77-58-7, Dibutyltin dilaurate 102-71-6, Triethanolamine, uses 121-44-8, Triethylamine, uses 280-57-9, Triethylenediamine 301-10-0, Stannous octoate 1067-33-0
RL: CAT (Catalyst use); USES (Uses)
(catalysts; in manufacture of gelled **electrolyte** with good mech. strength)
IT 1309-48-4, Magnesium oxide, uses 1314-13-2, Finex 25, uses 1344-28-1, Aluminum oxide, uses 7791-03-9, Lithium perchlorate 13463-67-7, MT 500B, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium

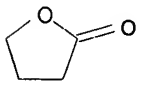
hexafluorophosphate 84135-65-9, Finesil T 32 112153-70-5, Aerosil R 805
RL: NUU (Other use, unclassified); USES (Uses)
(in manufacture of gelled **electrolyte** with good mech. strength)

IT 107040-16-4 107678-92-2 176676-78-1, Hexamethylene diisocyanate-1,9-nonanediol-**polyethylene oxide** block copolymer 176676-79-2, 4,4'-Diphenylmethane diisocyanate-ethylene glycol-**polyethylene oxide**-polypropylene oxide block copolymer 176676-80-5
RL: TEM (Technical or engineered material use); USES (Uses)
(in manufacture of gelled **electrolyte** with good mech. strength)

IT **96-48-0**, γ- **Butyrolactone** 108-32-7, Propylene carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; in manufacture of gelled **electrolyte** with good mech. strength)

IT **96-48-0**, γ- **Butyrolactone**
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; in manufacture of gelled **electrolyte** with good mech. strength)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:148076 HCAPLUS
DN 124:181166
TI Solid-**electrolyte batteries**
IN Yamazaki, Mikya; Fujimoto, Masahisa; Shoji, Yoshihiro; Yoshimura, Seiji; Nishio, Koji; Saito, Toshihiko
PA Sanyo Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 07320746 | A2 | 19951208 | JP 1994-131420 | 19940520 |
| PRAI JP 1994-131420 | | 19940520 | | |

AB The **batteries** comprise Li anodes and (1) polymer solid **electrolytes** which are composites of carbonate ester group- or lactone group-introduced polymers and **electrolyte** salts or (2) polymer gel-type **electrolytes** comprising carbonate ester group- or lactone group-introduced polymers impregnated with **electrolyte** solns. containing **electrolyte** salts and nonprotonic solvents. The carbonate ester group may be ethylene carbonate, propylene carbonate, di-Me carbonate, or di-Et carbonate. The lactone group may be γ-**butyrolactone.** The polymers may be polyethylene, polystyrene, **polyethylene oxide**, or polyoxymethylene. The **batteries** have high high-rate discharge capacity.

IC ICM H01M006-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST carbonate solid polymer **electrolyte battery**; lactone solid polymer **electrolyte battery**

IT **Battery electrolytes**
(polymers containing carbonate ester group or lactone group for solid **electrolytes** or gel-type solid **electrolytes** for **batteries** for high-rate discharge capacity)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(anode; polymers containing carbonate ester group or lactone group for solid **electrolytes** or gel-type solid **electrolytes** for **batteries** for high-rate discharge capacity)

IT 9002-81-7, Polyoxymethylene 9002-88-4, Polyethylene 9003-53-6, Polystyrene 25322-68-3, **Polyethylene oxide**
RL: DEV (Device component use); USES (Uses)
(carbonate ester- or lactone-introduced; polymers containing carbonate ester group or lactone group for solid **electrolytes** or gel-type solid **electrolytes** for **batteries** for high-rate discharge capacity)

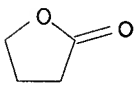
IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; polymers containing carbonate ester group or lactone group for solid **electrolytes** or gel-type solid **electrolytes** for **batteries** for high-rate discharge capacity)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
RL: DEV (Device component use); USES (Uses)
(polymers introduced with; polymers containing carbonate ester group or lactone group for solid **electrolytes** or gel-type solid **electrolytes** for **batteries** for high-rate discharge capacity)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(polymers introduced with; polymers containing carbonate ester group or lactone group for solid **electrolytes** or gel-type solid **electrolytes** for **batteries** for high-rate discharge capacity)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1996:138049 HCAPLUS

DN 124:181143

TI Gelled **electrolyte** lithium **batteries**

IN Yoshimura, Seiji; Shoji, Yoshihiro; Yamazaki, Mikya; Nishio, Koji; Saito, Toshihiko

PA Sanyo Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 07320750 | A2 | 19951208 | JP 1994-131432 | 19940520 |
| | JP 3384616 | B2 | 20030310 | | |
| PRAI | JP 1994-131432 | | 19940520 | | |

AB The **batteries** use a gelled polymer **electrolyte** containing an **electrolyte** salt and an aprotic solvent mixture comprising 40-80 volume% of a high b.p. solvent selected from ethylene carbonate, propylene carbonate, butylene carbonate, γ- **butyrolactone**, and sulfolane and 5-50 volume% each of ≥2 low b.p. solvent selected from 1,2-dimethoxyethane, 1,2-diethoxyethane, 1,2-ethoxymethoxyethane, THF, 2-Me THF, 1,3-dioxolane, 4-methyl-1,3-dioxolane, di-Me carbonate, di-Et carbonate, and Et Me carbonate. The polymer may be **polyethylene oxide**, polypropylene oxide, or polyethylenimine. The **batteries** have high capacity at high rate discharging.

IC ICM H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery** polymer gelled **electrolyte**; aprotic solvent gelled polymer **electrolyte battery**

IT **Battery electrolytes**
(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)

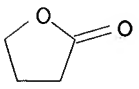
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)

IT 96-47-9, 2-Methyltetrahydrofuran **96-48-0**, γ-**Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 5137-45-1, 1,2-Ethoxymethoxyethane 9002-98-6 **25322-68-3**, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide)
RL: **DEV (Device component use)**; USES (Uses)
(aprotic **solvent** mixts. for gelled polymer **electrolytes** for lithium **batteries**)

IT **96-48-0**, γ- **Butyrolactone** **25322-68-3**, Poly(ethylene oxide)
RL: **DEV (Device component use)**; USES (Uses)
(aprotic **solvent** mixts. for gelled polymer **electrolytes** for lithium **batteries**)

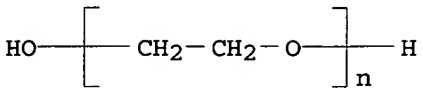
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



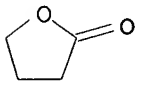
L30 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:138048 HCAPLUS
DN 124:181142
TI Gelled **electrolyte** lithium **batteries**
IN Yoshimura, Seiji; Shoji, Yoshihiro; Yamazaki, Mikya; Nishio, Koji; Saito, Toshihiko
PA Sanyo Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 07320749 | A2 | 19951208 | JP 1994-131431 | 19940520 |
| | JP 3384615 | B2 | 20030310 | | |
| PRAI | JP 1994-131431 | | 19940520 | | |

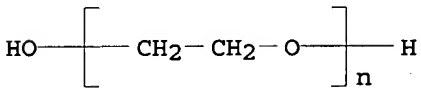
AB The **batteries** use a gelled polymer **electrolyte** impregnated with an **electrolyte** solution containing an **electrolyte** salt and an aprotic solvent mixture containing 5-50 volume% each of 2 high b.p. solvents selected from ethylene carbonate, propylene carbonate, butylene carbonate, γ- **butyrolactone**, and sulfolane and 10-50 volume% of 1 low b.p. solvent selected from 1,2-dimethoxyethane, 1,2-diethoxyethane, 1,2-ethoxymethoxyethane, THF, 2-Me THF, 1,3-dioxolane, 4-methyl-1,3-dioxolane, di-Me carbonate, di-Et carbonate, or Et Me carbonate. The polymer may be **polyethylene oxide**, polypropylene oxide, or polyethyleneimine. The **batteries** have high capacity at high rate discharging.

IC ICM H01M006-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** polymer gelled **electrolyte**; aprotic solvent gelled polymer **electrolyte battery**
IT **Battery electrolytes**
(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)
IT 96-47-9, 2-Methyltetrahydrofuran **96-48-0**, γ-**Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 5137-45-1, 1,2-Ethoxymethoxyethane 9002-98-6 **25322-68-3**, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide)
RL: **DEV (Device component use)**; USES (Uses)
(aprotic **solvent** mixts. for gelled polymer **electrolytes** for lithium **batteries**)
IT **96-48-0**, γ- **Butyrolactone** **25322-68-3**, Poly(ethylene oxide)

RL: **DEV (Device component use)**; USES (Uses)
(aprotic **solvent** mixts. for gelled polymer **electrolytes** for lithium **batteries**)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 23 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:102519 HCAPLUS
DN 124:119674
TI Aromatic polyamide-based ion-conductive films and precursor film therefor
IN Muraoka, Shigemitsu; Hamada, Masami
PA Asahi Kasei Kogyo K K, Japan
SO PCT Int. Appl.; 25 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 9531499 | A1 | 19951123 | WO 1995-JP958 | 19950518 |
| | W: JP, US | | | | |
| | RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | EP 760383 | A1 | 19970305 | EP 1995-918745 | 19950518 |
| | EP 760383 | B1 | 20020807 | | |
| | R: DE, FR, GB, NL | | | | |
| | US 5834112 | A | 19981110 | US 1997-737159 | 19970226 |
| PRAI | JP 1994-103631 | A | 19940518 | | |
| | JP 1994-119768 | A | 19940601 | | |
| | WO 1995-JP958 | W | 19950518 | | |

AB The title films, with good heat resistance and mech. strength, useful as solid **electrolytes** for secondary alkaline **batteries**, etc., comprise 20-70% aromatic polyamides (e.g., p-phenylenediamine-terephthalic acid copolymer), **electrolytes** (e.g., LiCl, NaOH, LiNO3, LiBF4), and solvents (e.g., **polyethylene oxide**, water, propylene carbonate-ethylene carbonate-γ- **butyrolactone** mixture) and optionally laminated with **electrolyte**-containing polymer layers (e.g., of polycarbonates).
IC ICM C08J005-18
ICS C08L077-10; B32B027-34; H01B001-20
ICA H01M006-18
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
ST arom polyamide film **battery** separator; **electrolyte**

arom polyamide **battery** separator; lithium chloride arom polyamide film; sodium hydroxide arom polyamide film; nitrate lithium arom polyamide film; boron lithium fluoride arom polyamide film; heat resistance arom polyamide film; ion conductive arom polyamide film; polycarbonate arom polyamide laminate

IT **Batteries**, secondary
Electric conductors
**Electrolytes**
(aromatic polyamide-based ion-conductive films and precursor film therefor)

IT Polycarbonates, uses
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PROC (Process); USES (Uses)
(aromatic polyamide-based ion-conductive films and precursor film therefor)

IT Alkali metal compounds
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**electrolytes**; aromatic polyamide-based ion-conductive films and precursor film therefor)

IT Polyamides, uses
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic, aromatic polyamide-based ion-conductive films and precursor film therefor)

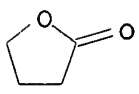
IT 1310-73-2, Sodium hydroxide, uses 7447-41-8, Lithium chloride, uses 7790-69-4, Lithium nitrate 14283-07-9
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(aromatic polyamide-based ion-conductive films and precursor film therefor)

IT 24938-64-5, p-Phenylenediamine-terephthalic acid copolymer, SRU 25035-37-4, p-Phenylenediamine-terephthalic acid copolymer
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic polyamide-based ion-conductive films and precursor film therefor)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7732-18-5, Water, uses 25322-68-3, **Polyethylene oxide**
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; aromatic polyamide-based ion-conductive films and precursor film therefor)

IT **96-48-0**, γ- **Butyrolactone**
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; aromatic polyamide-based ion-conductive films and precursor film therefor)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:537503 HCAPLUS
DN 121:137503
TI An ionic conductive polymer **electrolyte**
IN Kanbara, Teruhisa; Takeyama, Kenichi; Tsubaki, Yuichiro

PA Matsushita Electric Industrial Co., Ltd., Japan
SO Eur. Pat. Appl., 37 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 579921 | A1 | 19940126 | EP 1993-108097 | 19930518 |
| | EP 579921 | B1 | 20030102 | | |
| | R: DE, DK, FR, GB | | | | |
| | JP 06045190 | A2 | 19940218 | JP 1992-196754 | 19920723 |
| | JP 06203874 | A2 | 19940722 | JP 1992-348114 | 19921228 |
| | JP 3269146 | B2 | 20020325 | | |
| | US 5538811 | A | 19960723 | US 1993-62782 | 19930514 |
| | CN 1083259 | A | 19940302 | CN 1993-107708 | 19930518 |
| | CN 1063871 | B | 20010328 | | |
| | EP 971427 | A1 | 20000112 | EP 1999-115038 | 19930518 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE | | | | |
| PRAI | JP 1992-196754 | A | 19920723 | | |
| | JP 1992-348114 | A | 19921228 | | |
| | EP 1993-108097 | A3 | 19930518 | | |

AB The **electrolyte** contains a polymer having an ether-type oxygen, especially a random ethylene oxide-propylene oxide copolymer, and a plasticizer. The plasticizer is ≥1 compound described by the formulas HO(C2H4O)nH where n is 2, 3, 4 or 5; RO(C2H4O)nH where R is CH3, C2H5, C3H7 or C4H9 and n is 3, 4 or 5; R1O(C2H4O)nR2 where R1=R2=CH3 and n is 4, 5 or 6 or R1=R2=C2H5 and n is 4, 5 or 6 or R1=R2=C3H7 and n is 3, 4, 5 or 6 or R1=R2=C4H9 and n is 2, 3, 4 or 5 or R1=CH3, R2=C4H9, and n is 4, 5 or 6; R1O(C2H4O)n(C3H6O)mH where n+m is 2, 3, 4 or 5 and R1=CH3, C2H5, C3H7 or C4H9; and R1O(C2H4O)n(C3H6O)mR2 where n+m is 2, 3, 4, or 5 and R1=R2=CH3.

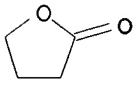
IC ICM H01M006-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **electrolyte** polymer polyether plasticizer
IT Polyethers, uses
RL: USES (Uses)
(crosslinked, **electrolyte** containing random, and plasticizers)
IT **Battery electrolytes**
(ionic conductive polymeric, containing plasticizers)
IT Electric conductors, polymeric
(ionic, random ethylene oxide-propylene oxide polymers and plasticizers as)
IT 9003-11-6, Ethylene oxide-propylene oxide copolymer 9082-00-2, Ethylene oxide-propylene oxide copolymer, glycerol ether
RL: USES (Uses)
(**electrolyte** containing plasticizers and)
IT 338-38-5, Tetrapropylammonium tetrafluoroborate 429-06-1, Tetraethylammonium tetrafluoroborate 429-07-2, Tetraethylammonium hexafluorophosphate 429-42-5, Tetrabutylammonium fluoroborate 558-32-7 661-36-9, Tetramethylammonium tetrafluoroborate 1493-13-6D, Trifluoromethanesulfonic acid, tetraalkylphosphonium salts 1813-60-1, Tetrabutylphosphoniumtetrafluoroborate 1863-63-4, Ammonium benzoate 2567-83-1, Tetraethylammonium perchlorate 5574-97-0, Tetrabutylammonium phosphate 7439-93-2D, Lithium, salts 7601-90-3D, Perchloric acid, tetraalkylphosphonium salts 7790-98-9D, Ammonium perchlorate, tetraalkyl derivs. 12110-21-3, Tetrapropylammonium hexafluorophosphate 13826-83-0D, Ammonium tetrafluoroborate, tetraalkyl derivs. 14283-07-9, Lithium fluoroborate 14874-70-5D, Tetrafluoroborate, tetraalkylphosphonium salts 16909-22-1, Tetraethylammonium benzoate 16919-18-9D, Hexafluorophosphate, tetraalkylphosphonium salts

16941-11-0D, Ammonium hexafluorophosphate, tetraalkyl derivs.
18819-89-1, Tetrabutylammonium benzoate 19090-60-9, Ammonium adipate
19443-40-4, Ammonium borodisalicylate 21324-40-3, Lithium
hexafluorophosphate 35895-70-6, Tetrabutyl ammonium
trifluoromethanesulfonate 38542-94-8D, Ammonium
trifluoromethanesulfonate, tetraalkyl derivs. 41606-95-5,
Tetraethylammonium phthalate 53123-48-1 68874-26-0 82169-85-5,
Ammonium azelate 106362-67-8 111754-37-1, Tetraethylammonium maleate
111754-40-6, Tetraethylammonium maleate 111928-06-4,
Tetraethylphosphoniumtrifluoromethanesulfonate 114480-39-6
114609-41-5, Tetraethylphosphonium phthalate 129024-43-7
RL: USES (Uses)
(**electrolyte** containing random polyethers and plasticizers and)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene
carbonate 107-21-1, Monoethylene glycol, uses 108-32-7, Propylene
carbonate 112-27-6, Triethylene glycol 112-34-5, Diethylene glycol
monobutyl ether 112-35-6, Triethylene glycol monomethyl ether
112-50-5, Triethylene glycol monoethyl ether 112-60-7, Tetraethylene
glycol 112-73-2, Diethylene glycol dibutyl ether 112-98-1,
Tetraethylene glycol dibutyl ether 123-91-1, Diethylene oxide, uses
143-22-6, Triethylene glycol monobutyl ether 143-24-8, Tetraethylene
glycol dimethyl ether 1559-34-8, Tetraethylene glycol monobutyl ether
4353-28-0, Tetraethylene glycol diethyl ether 5650-20-4, Tetraethylene
glycol monoethyl ether 9004-74-4, **Polyethylene oxide**
, monomethyl ether 9004-77-7, Polyethylene glycol monobutyl ether
9038-95-3 9063-06-3 23305-64-8, Triethylene glycol monopropyl ether
23307-36-0, 3,6,9,12-Tetraoxapentadecan-1-ol 23783-42-8, Tetraethylene
glycol monomethyl ether 24991-55-7, Polyethylene glycol dimethyl ether
25322-68-3, **Polyethylene oxide** 27879-07-8,
**Polyethylene oxide**, monoethyl ether 28830-99-1,
4,7,10,13,16-Pentaoxanonadecane 31885-97-9, Polyethylene glycol dibutyl
ether 34410-16-7, **Polyethylene oxide**, monopropyl
ether 50958-06-0 53609-62-4, Polyethylene glycol diethyl ether
54692-61-4 55068-41-2 60314-50-3, Polyethylene glycol dipropyl ether
61419-46-3 63512-36-7, Triethylene glycol dibutyl ether 76058-48-5,
Tetraethylene glycol butyl methyl ether 77318-45-7, 4,7,10,13-
Tetraoxahexadecane 80730-57-0
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer, **electrolyte** containing random polyethers and)

IT **96-48-0**, γ- **Butyrolactone**
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer, **electrolyte** containing random polyethers and)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:564029 HCAPLUS
DN 119:164029
TI Secondary **battery** with solid **electrolyte**
IN Simon, Bernard; Boeuve, Jean Pierre
PA Alcatel Alsthom Compagnie Generale d'Electricite, Fr.
SO Eur. Pat. Appl., 4 pp.
CODEN: EPXXDW

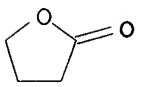
DT Patent
LA French
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 517069 | A1 | 19921209 | EP 1992-108841 | 19920526 |
| | EP 517069 | B1 | 19960327 | | |
| | R: CH, DE, ES, FR, GB, IT, LI, NL, SE | | | | |
| | FR 2677174 | A1 | 19921204 | FR 1991-6589 | 19910531 |
| | FR 2677174 | B1 | 19930806 | | |
| | ES 2084871 | T3 | 19960516 | ES 1992-108841 | 19920526 |
| | US 5232795 | A | 19930803 | US 1992-889234 | 19920528 |
| | JP 05205778 | A2 | 19930813 | JP 1992-139408 | 19920529 |
| PRAI | FR 1991-6589 | A | 19910531 | | |

AB The **battery** has an **electrolyte** of a polymer containing a Li salt and a dipolar aprotic solvent, an anode of a Li-intercalatable carbonaceous material and the **electrolyte**, and a cathode of a material having a high redox potential, the **electrolyte**, and a conductive powder. The carbonaceous material is at least on the surface less crystalline than graphite and impermeable to solvent, while permitting the diffusion of Li. The carbonaceous material is selected from coke, graphitized carbon fibers, and pyrolytic C, and it contains a surface layer obtained by chemical vapor deposition using hydrocarbons or by carbonization of a polymer film. The salt anions are selected from AsF6-, BF4-, PF6-, CF3SO3-, ClO4-, BPh4-, N(CF3SO2)2, and SCN-; the nonaq. solvent is selected from ethylene carbonate, propylene carbonate, THF, etc.; and the polymer is selected from PEO, poly(propylene oxide) and ethylene oxide-propylene oxide copolymer. The cathode active material is selected from LiV2O5, LiCO2, and Li-doped polyaniline or polypyrrole. The stability of the invention button-type **battery** anode was demonstrated in >500 charge-discharge cycles.

IC ICM H01M010-40
ICS H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** anode carbonaceous material; anode lithium intercalatable carbonaceous material; polymer **electrolyte** carbonaceous material anode; salt lithium solvent polymer **electrolyte**; solvent polar salt polymer **electrolyte**
IT **Battery electrolytes**
(aprotic dipolar solvent-containing lithium salt-PEO or lithium salt-poly(propylene oxide) complexes)
IT **Batteries**, secondary
(lithium-intercalatable carbonaceous material, long cycle-life)
IT Carbonaceous materials
Coke
RL: USES (Uses)
(lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)
IT Solvents
(aprotic, dipolar, **electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)
IT Anodes
(**battery**, lithium-intercalatable carbonaceous materials, containing polymer **electrolytes**)
IT Carbon fibers, uses
RL: USES (Uses)
(graphite, lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)

IT 7440-44-0 7782-42-5
RL: USES (Uses)
(carbon fibers, graphite, lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)
IT 12162-92-4, Lithium vanadium oxide (LiV2O5) 12190-79-3, Cobalt lithium oxide (liCoO2) 25233-30-1D, reduced, lithium-doped 30604-81-0D, Polypyrrole, reduced, lithium-doped
RL: USES (Uses)
(cathodes, containing polymer **electrolytes**, for **batteries**)
IT 67-68-5, DMSO, uses **96-48-0**, γ- **Butyrolactone**
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-99-9, THF, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 616-42-2, Dimethyl sulfite 24991-55-7, Polyethyleneglycol dimethyl ether
RL: USES (Uses)
(**electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)
IT 7439-93-2D, Lithium, polymer complexes 9003-11-6D, Lithium complexes 25322-68-3D, **Polyethylene oxide**, Lithium complexes 25322-69-4D, Polypropylene oxide, Lithium complexes
RL: USES (Uses)
(**electrolytes** from nonaq. aprotic dipolar solvents and, for **batteries** and **battery** anodes and cathodes)
IT **96-48-0**, γ- **Butyrolactone**
RL: USES (Uses)
(**electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 26 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:499821 HCAPLUS
DN 119:99821
TI A new gelling agent and its application as a solid **electrolyte** for lithium **batteries**
AU Ue, Makoto; Kaitoh, Mitsumasa; Yasukawa, Eiki; Mori, Shoichiro
CS Tsukuba Res. Cent., Mitsubishi Petrochem. Co., Ltd., Ami, 300-03, Japan
SO Electrochimica Acta (1993), 38(9), 1301-2
CODEN: ELCAAV; ISSN: 0013-4686
DT Journal
LA English
AB A new gelling agent 1,3:2,4-di(p-methoxycarbonylbenzylidene)sorbitol was used to immobilize liquid **electrolytes** for Li **batteries**. The liquid **electrolytes** were solidified without a significant decrease in conductivity The mech. strength of a gelled **electrolyte** comprising a polymer matrix of poly(ethylene oxide)-grafted poly(methacrylate) and the liquid **electrolyte** was remarkably enhanced without a conductivity decrease.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST methoxycarbonylbenzylidenesorbitol gelling agent liq **electrolyte** **battery**; lithium **battery** gelled **electrolyte**;

**polyethylene oxide** grafted polymethacrylate gelled **electrolyte**

IT **Battery electrolytes**
(liquid, dibenzylidenesorbitol derivs. gelling agents in, for immobilization)

IT 68-12-2, N,N-Dimethylformamide, uses **96-48-0**, γ-**Butyrolactone** 108-32-7, Propylene carbonate 110-71-4
RL: USES (Uses)
(**electrolyte** containing, dibenzylidenesorbitol derivs. gelling agents in, for lithium **batteries**, for immobilization)

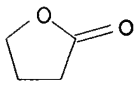
IT 108927-94-2
RL: USES (Uses)
(**electrolyte** containing, gelled, for lithium **batteries**, for mech. strength)

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate (LiBF4)
RL: USES (Uses)
(**electrolyte**, dibenzylidenesorbitol derivs. gelling agents in, for **batteries**, for immobilization)

IT 125498-92-2
RL: USES (Uses)
(gelling agent, **electrolytes** containing, liquid, for immobilization, for lithium **batteries**)

IT **96-48-0**, γ- **Butyrolactone**
RL: USES (Uses)
(**electrolyte** containing, dibenzylidenesorbitol derivs. gelling agents in, for lithium **batteries**, for immobilization)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



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=> => D QUE
L5             1 SEA FILE=REGISTRY ABB=ON  BUTYROLACTONE/CN
L6             1 SEA FILE=REGISTRY ABB=ON  "POLYETHYLENE OXIDE"/CN
L7         15837 SEA FILE=HCAPLUS ABB=ON  L5 OR BUTYROLACTONE
L8         84653 SEA FILE=HCAPLUS ABB=ON  L6
L9           321 SEA FILE=HCAPLUS ABB=ON  L7 AND L8
L11         2202 SEA FILE=HCAPLUS ABB=ON  L7(L)ELECTROLYT?
L13            4 SEA FILE=HCAPLUS ABB=ON  L11(L)L8
L15          140 SEA FILE=HCAPLUS ABB=ON  L9 AND ELECTROLYT?
L16           97 SEA FILE=HCAPLUS ABB=ON  L15 AND BATTER?
L17         2675 SEA FILE=HCAPLUS ABB=ON  L8(L)DEV/RL
L18           61 SEA FILE=HCAPLUS ABB=ON  L17 AND L16
L19         1588 SEA FILE=HCAPLUS ABB=ON  L7(5A)SOLVENT#
L21            6 SEA FILE=HCAPLUS ABB=ON  L18 AND L19
L22            9 SEA FILE=HCAPLUS ABB=ON  L13 OR L21
L23         7685 SEA FILE=HCAPLUS ABB=ON  POLYMER(4A)ADDITIV?
L24            1 SEA FILE=HCAPLUS ABB=ON  L18 AND L23
L25            1 SEA FILE=HCAPLUS ABB=ON  L16 AND L23
L26            9 SEA FILE=HCAPLUS ABB=ON  L22 OR L24 OR L25
L27           47 SEA FILE=HCAPLUS ABB=ON  L7 AND POLYETHYLENE OXIDE
L28           30 SEA FILE=HCAPLUS ABB=ON  L27 AND ELECTROLYT?
L29           20 SEA FILE=HCAPLUS ABB=ON  L28 AND BATTER?
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L30          26 SEA FILE=HCAPLUS ABB=ON  L26 OR L29
L31          78 SEA FILE=HCAPLUS ABB=ON  L7 AND PEO
L32          53 SEA FILE=HCAPLUS ABB=ON  L31 AND ELECTROLYT? AND BATTER?
L33           2 SEA FILE=HCAPLUS ABB=ON  L19 AND L32
L34          43 SEA FILE=HCAPLUS ABB=ON  L11 AND L32
L35           0 SEA FILE=HCAPLUS ABB=ON  L23 AND L34
L36           0 SEA FILE=HCAPLUS ABB=ON  L23 AND L32
L40          10 SEA FILE=HCAPLUS ABB=ON  L32 AND NONAQ?
L41          36 SEA FILE=HCAPLUS ABB=ON  L30 OR L33 OR L35 OR L36 OR L40
L42          10 SEA FILE=HCAPLUS ABB=ON  L41 NOT L30


=> D L42 BIB ABS IND HITSTR 1-10

L42  ANSWER 1 OF 10  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN   2004:964673  HCAPLUS
DN   141:398264
TI   Method for preparation of chemically crosslinked polyacrylonitrile polymer
     electrolyte as separator for secondary battery
IN   Chen, Show-An; Xue, Uan-Jie; Lee, Jen-Jeh; Wang, Po-Shen
PA   Taiwan
SO   U.S. Pat. Appl. Publ., 12 pp.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   US 2004224233        A1    20041111    US 2003-428789         20030505
PRAI US 2003-428789               20030505
AB   A composite gel-type polymer electrolyte membrane, as a
     separator between the pos. and the neg. electrode for secondary
     battery, consists of crosslinked gel-type polyacrylonitrile (PAN)
     electrolytes, polyvinylidene fluoride (PVDF) polymers and liquid
     electrolytes. The crosslinked gel-type PAN electrolytes
     are copolymd. by acrylonitrile (AN) monomers and crosslinked monomers with
     two terminal acrylic acid ester function groups. The PVdF can be
     PVdF-co-HFP polymers containing over 80% PVdF. The liquid electrolytes
     are made from using nonaq. solvents to dissolve alkaline or alkaline
     earth metallic salts. This invention has advantages of superior ionic
     conductivities and mech. strength at high temperature, fine compatible to pos.
     and neg. electrodes and potential to be industrialized.
IC   ICM  H01M010-40
     ICS  H01M004-58; H01M004-60; H01M004-40
INCL 429303000; 429314000; 429316000; 429317000; 429307000; 429213000;
     429231950; 429231400
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
ST   polyacrylonitrile electrolyte separator secondary
     battery
IT   Secondary batteries
       (lithium; method for preparation of chemical crosslinked polyacrylonitrile
       electrolyte as separator for secondary battery)
IT   Adhesion, physical
       Battery electrolytes
     Conducting polymers
     Ionic conductivity
     Secondary battery separators
     Swelling, physical
       (method for preparation of chemical crosslinked polyacrylonitrile
```

**electrolyte** as separator for secondary **battery**)

IT Alkali metal salts
Alkaline earth salts
Amides, uses
Esters, uses
Fluoropolymers, uses
Lactones
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT Polysulfides
RL: DEV (Device component use); USES (Uses)
(organic; method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT Fillers
(porous; method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

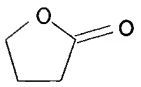
IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4 463-79-6D, Carbonic acid, ester, acyclic 463-79-6D, Carbonic acid, ester, cyclic 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 872-50-4, n-Methylpyrrolidone, uses 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7447-41-8, Lithium chloride (LiCl), uses 7550-35-8, Lithium bromide (LiBr) 7704-34-9D, Sulfur, organic compds., polymers 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 10377-51-2, Lithium iodide 10411-26-4, Butyl carbonate 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide ($LiMn_2O_4$) 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide (CoLiO2) 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 29935-35-1, Lithium hexafluoroarsenate 30604-81-0, Polypyrrole 33454-82-9, Lithium triflate 39448-96-9, Graphite lithium 90076-65-6 132404-42-3 132843-44-8 210406-60-3
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT 25014-41-9P, Polyacrylonitrile
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT 25322-68-3, **Peo**
RL: MOA (Modifier or additive use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L42 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:412653 HCAPLUS
DN 140:409655
TI **Nonaqueous electrolytic** solution for lithium **battery**
IN Kim, Ju-Yup; Cho, Myung-Dong; Ryu, Young-Gyoon
PA Samsung SDI Co., Ltd., S. Korea
SO U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 2004096750 | A1 | 20040520 | US 2003-669464 | 20030925 |
| CN 1501541 | A | 20040602 | CN 2003-158727 | 20030922 |
| JP 2004172120 | A2 | 20040617 | JP 2003-385057 | 20031114 |
| PRAI KR 2002-71397 | A | 20021116 | | |

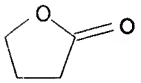
OS MARPAT 140:409655
AB A **nonaq. electrolytic** solution and a lithium **battery** employing the same are provided. The **nonaq. electrolyte** solution that contains a substituted or unsubstituted acetate can effectively stabilize lithium metal and improve the conductivity of lithium ions.
IC ICM H01M010-40
ICS H01M004-58; H01M004-48; H01M004-40
INCL 429326000; 429332000; 429218100; 429231950; 429231100
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery nonaq electrolytic** soln
IT Secondary **batteries**
(lithium; **nonaq. electrolytic** solution for lithium **battery**)
IT **Battery electrolytes**
(**nonaq. electrolytic** solution for lithium **battery**)
IT Carbon black, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** solution for lithium **battery**)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** solution for lithium **battery**)
IT 71-43-2D, Benzene, organic solvents containing monofluoro derivs. **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4 111-96-6, Diethyleneglycol dimethyl ether 112-36-7, Diethyleneglycol diethyl ether 112-49-2, Triethyleneglycol dimethyl ether 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl carbonate 646-06-0,

1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5, 4-Methyl-1,3-dioxolane 1072-57-7 4499-99-4, Triethyleneglycol diethyl ether 7439-93-2, Lithium, uses 7440-44-0D, Carbon, sulfur compound, polymer 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, carbon compound, polymer 12137-46-1, Kasolite 21324-40-3, Lithium hexafluorophosphate 25322-68-3, **Peo** 29921-38-8, 4-Ethyl-1,3-dioxolane 31371-55-8, Ethane, 1,2-dimethoxy-, homopolymer 73506-93-1, Diethoxyethane 74432-42-1, Lithium polysulfide 183140-14-9, 1,3-Dioxetan-2-one 676610-04-1
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** solution for lithium **battery**)

IT 105-37-3 105-53-3, Diethyl malonate 105-54-4 106-70-7 108-59-8, Dimethyl malonate 109-21-7 123-66-0 554-12-1 590-01-2 623-42-7 626-82-4 1190-39-2, DiButyl malonate 6186-89-6, Ethylmethyl malonate 17373-84-1, Butylethyl malonate 79546-83-1, Butylmethyl malonate 90076-65-6
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolytic** solution for lithium **battery**)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** solution for lithium **battery**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



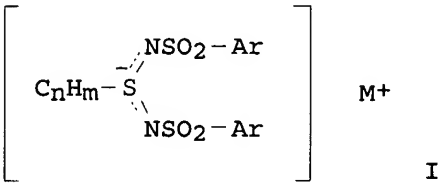
L42 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:818002 HCAPLUS
DN 139:326050
TI **Nonaqueous electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochemical cells
IN Shembel, Elena; Koval, Ivan V.; Oliynik, Tat'yna G.; Chervakov, Oleg V.; Novak, Peter
PA Ener1 Battery Company, Ukraine
SO U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 2003194612 | A1 | 20031016 | US 2002-122788 | 20020415 |
| US 6858346 | B2 | 20050222 | | |
| WO 2003090297 | A1 | 20031030 | WO 2003-US11644 | 20030415 |
| WO 2003090297 | C1 | 20041216 | | |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
EP 1500155 A1 20050126 EP 2003-728413 20030415
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
PRAI US 2002-122788 A 20020415
WO 2003-US11644 W 20030415

GI



I

AB An organic salt having an alkali metal bound to a disubstituted amide of alkane iminosulfinic acid has the general formula (I), where Ar is an aromatic group, M is an alkali metal such as Li, K or Na, and CnHm is an alkane. The organic salt can be used to form **nonaq.** liquid and gel or plasticized polymer **electrolytes.** The **electrolytes** can be used to form improved lithium and lithium ion **batteries.**

IC ICM H01M010-40
INCL 429324000; 429339000; 429340000; 429337000; 429338000; 429326000; 429331000; 429332000; 429333000; 429303000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 23, 38
ST **battery nonaq electrolyte** alkane iminosulfinic acid amide; electrochem cell **nonaq electrolyte** alkane iminosulfinic acid amide
IT Polymer **electrolytes**
(gel or plasticized; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(halo; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
IT Transition metal oxides
RL: DEV (Device component use); USES (Uses)
(lithiated; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
IT Secondary **batteries**
(lithium; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
IT **Battery electrolytes**
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT 70-55-3 98-10-2, Benzenesulfonamide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide (V2O5), uses 7439-93-2, LiThium, uses 7791-03-9, Lithium perchlorate 9002-86-2, Polyvinyl chloride 9002-86-2D, Polyvinyl chloride, chlorinated 9011-14-7, Pmma 12037-42-2, Vanadium oxide v6o13 12057-17-9, Lithium manganese oxide limn2o4 12798-95-7 14283-07-9, Lithium tetrafluoroborate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3, **Peo** 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 66798-39-8 87871-75-8 90076-65-6 164383-74-8 164383-75-9
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT 613685-10-2P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT 613685-08-8P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

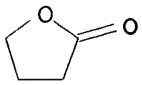
IT 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT 613685-09-9P
RL: SPN (Synthetic preparation); PREP (Preparation)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses **96-48-0**, γ-**Butyrolactone** 96-49-1, Ethylene carbonate 107-13-1, Acrylonitrile, uses 108-32-7, Propylene carbonate 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 127-19-5, Dimethyl acetamide 616-38-6, Dimethyl carbonate 646-06-0, 1,3-Dioxolane
RL: TEM (Technical or engineered material use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

IT **96-48-0**, γ- **Butyrolactone**
RL: TEM (Technical or engineered material use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)

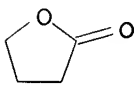
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:437466 HCAPLUS
DN 139:263175
TI Characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**
AU Matsuda, Yoshiharu; Fukushima, Tsuyoshi; Katoh, Yuichi; Ishiko, Eriko; Nishiura, Masahito; Kikuta, Manabu; Kono, Michiyuki
CS Faculty of Engineering, Department of Applied Chemistry, Kansai University, Suita, Osaka, 564-8680, Japan
SO Journal of Power Sources (2003), 119-121, 473-477
CODEN: JPSODZ; ISSN: 0378-7753
PB Elsevier Science B.V.
DT Journal
LA English
AB Gel polymer **electrolytes** consisted of poly(alkylene oxide) (PAO), LiBF4 or LiClO4, and aprotic **solvents** (γ-**butyrolactone** (GBL) and/or ethylene carbonate (EC)) were prepared and the conductivity was measured. The conductivity was very high and similar to that of the organic liquid **electrolytes.** The performance of Li | gel polymer **electrolyte** | LiCoO2 cell was measured and compared to that of the cell with the liquid **electrolyte** corresponded. The cell with the gel **electrolyte** showed a decrease of capacity at high-rate discharge and low temperature owing to concentration polarization.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST alkylene oxide polymer **electrolyte** gamma **butyrolactone** lithium salt **battery**; discharge capacity performance gel **electrolyte** lithium concn carbonate
IT Solvents
(aprotic; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT **Battery electrolytes**
Crosslinking
Gels
Ionic conductivity
Polymer **electrolytes**
(characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT Binders
(composite electrode with C and CoLiO2; characteristics of gel alkylene oxide polymer **electrolytes** containing γ-**butyrolactone**)

IT **Electrolytic** polarization
(concentration, change with cycling; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT Secondary **batteries**
(lithium; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 15520-11-3, Bis(4-tert-butylcyclohexyl) peroxydicarbonate
RL: CAT (Catalyst use); USES (Uses)
(characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 9003-11-6P, Ethylene oxide-propylene oxide copolymer
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(composite electrode with C and binder; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(composite electrode with binder and CoLiO2; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(electrode; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT 7791-03-9 14283-07-9
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(gels with aprotic solvent and **PEO**-PPO; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(gels with lithium salt and **PEO**-PPO; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(gels with lithium salt and **PEO**-PPO; characteristics of gel alkylene oxide polymer **electrolytes** containing γ- **butyrolactone**)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:163800 HCAPLUS
DN 136:219519
TI Phenyl boron-based compounds as anion receptors for **nonaqueous battery electrolytes**
IN Lee, Hung Sui; Yang, Xiao-qing; McBreen, James; Sun, Xuehui
PA Brookhaven Science Associates, Llc, USA
SO U.S., 15 pp., Cont.-in-part of U. S. 6,022,643.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 6352798 | B1 | 20020305 | US 2000-492569 | 20000127 |
| | US 6022643 | A | 20000208 | US 1997-986846 | 19971208 |
| PRAI | US 1997-986846 | A2 | 19971208 | | |

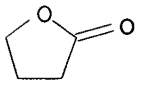
OS MARPAT 136:219519
AB Novel fluorinated boronate-based compds. which act as anion receptors in **nonaq. battery electrolytes** are provided. When added to **nonaq. battery electrolytes**, the fluorinated boronate-based compds. of the invention enhance ionic conductivity and cation transference number of **nonaq. electrolytes**. The fluorinated boronate-based anion receptors include different fluorinated alkyl and aryl groups.
IC ICM H01M006-14
INCL 429324000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27
ST **battery electrolyte** anion receptor fluorinated boronate based compd
IT **Battery electrolytes**
Ionic conductivity
(Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)
IT Polyanilines
Polyoxyalkylenes, uses
Polysulfides
Transition metal chalcogenides
Transition metal oxides
RL: DEV (Device component use); USES (Uses)
(Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)
IT Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(lithiated; Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)
IT 75-05-8, Acetonitrile, uses **96-48-0**, γ-**Butyrolactone** 96-49-1, Ethylene carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-87-5, Dimethoxymethane 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 115-10-6, Dimethyl ether 126-33-0, Sulfolane 534-22-5, 2-Methylfuran 616-38-6, Dimethyl carbonate 646-06-0, 1,3-Dioxolane 872-50-4, 1-Methyl-2-pyrrolidinone, uses 1072-47-5 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole

2923-17-3, Lithium trifluoroacetate 7439-93-2, Lithium, uses 7440-44-0D, Carbon, intercalation compound, with lithium 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 10377-51-2, Lithium iodide 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12201-18-2, Lithium molybdenum sulfide limos2 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 19836-78-3, 3-Methyl-2-oxazolidinone 21324-40-3, Lithium hexafluorophosphate 25014-41-9, Polyacrylonitrile 25233-30-1, Polyaniline 25322-68-3, **Peo** 25948-29-2, Carbon disulfide, homopolymer 29935-35-1, Lithium hexafluoroarsenate 39448-96-9, Graphite lithium 55326-82-4, Lithium titanium sulfide litis2 55886-04-9, Lithium niobium selenide Li3NbSe3 87187-79-9, Propanoic acid, pentafluoro-, lithium salt 87442-01-1, Benzoic acid, pentafluoro-, lithium salt 131344-56-4, Cobalt lithium nickel oxide 138187-48-1, Lithium vanadium oxide Li1.2V2O5 152991-98-5, Aluminum lithium nickel oxide 159967-11-0, Lithium magnesium nickel oxide 180984-62-7, Lithium nickel titanium oxide 256345-13-8, Lithium vanadium oxide Li2.5V6O13
RL: DEV (Device component use); USES (Uses)
(Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)

IT 23542-71-4P 365458-32-8P 365458-33-9P 365458-34-0P 365458-35-1P 365458-36-2P 365458-37-3P 365458-38-4P 365458-39-5P 365458-40-8P 402564-35-6P 402564-36-7P 402564-37-8P 402564-38-9P 402564-39-0P
RL: DEV (Device component use); MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(Ph boron-based compds. as anion receptors for **nonaq. battery electrolytes**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:488750 HCAPLUS
DN 135:79460
TI **Nonaqueous electrolytic** secondary **battery**
IN Hosoya, Yosuke
PA Sony Corporation, Japan
SO Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 1113515 | A1 | 20010704 | EP 2000-128148 | 20001221 |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

| | | | | |
|---|---|---|---|---|
| JP 2001185221 | A2 | 20010706 | JP 1999-369266 | 19991227 |
| US 2001036579 | A1 | 20011101 | US 2000-749982 | 20001227 |
| US 6656634 | B2 | 20031202 | | |
| PRAI JP 1999-369266 | A | 19991227 | | |

AB A **nonaq. electrolytic** cell comprises a pos. electrode, which has a pos. electrode active material layer containing, at least a pos. electrode active material, a neg. electrode, which has a neg. electrode active material layer containing, at least, a neg. electrode active material, and an **electrolyte** wherein a sulfur compound is added to at least one of the pos. electrode active material layer, the neg. electrode active material layer, and the **electrolyte.**

IC ICM H01M004-50
ICS H01M004-52; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery nonaq electrolyte**

IT **Battery** anodes
**Battery** cathodes
**Battery electrolytes**
Conducting polymers
(**nonaq. electrolytic** secondary **battery**)

IT Coke
Fluoropolymers, uses
Polyacetylenes, uses
Polyoxyalkylenes, uses
Polyphosphazenes
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** secondary **battery**)

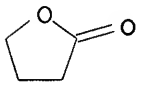
IT Thiols (organic), uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolytic** secondary **battery**)

IT Carbon fibers, uses
RL: DEV (Device component use); USES (Uses)
(vitreous; **nonaq. electrolytic** secondary **battery**)

IT 96-47-9, 2-Methyltetrahydrofuran **96-48-0**, γ-**Butyrolactone** 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 554-12-1, Methylpropionate 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-36-6, Vinylene carbonate 2916-31-6 4437-85-8, Butylene carbonate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25067-58-7, Polyacetylene 25322-68-3, **Peo** 25322-69-4, Polypropylene oxide 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 29935-35-1, Lithium hexafluoroarsenate
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** secondary **battery**)

IT 693-36-7, Distearyl thiodipropionate 7487-88-9, Magnesium sulfate, uses 7757-82-6, Sodium sulfate, uses 7757-83-7, Sodium sulfite 7757-88-2, Magnesium sulfite 7778-80-5, Potassium sulfate, uses 10117-38-1, Potassium sulfite
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolytic** secondary **battery**)
IT 872-50-4, n-Methylpyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**nonaq. electrolytic** secondary **battery**)
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytic** secondary **battery**)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



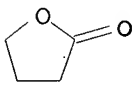
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2001:246688 HCAPLUS
DN 134:254694
TI Gel **electrolyte battery**
IN Shibuya, Mashio; Hatazawa, Tsuyonobu; Hara, Tomitaro; Shibamoto, Goro; Goto, Shuji
PA Sony Corporation, Japan
SO Eur. Pat. Appl., 24 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 1089371 | A1 | 20010404 | EP 2000-121124 | 20000928 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2001167797 | A2 | 20010622 | JP 1999-375345 | 19991228 |
| | TW 512555 | B | 20021201 | TW 2000-89119769 | 20000925 |
| | NO 2000004856 | A | 20010402 | NO 2000-4856 | 20000927 |
| | US 6509123 | B1 | 20030121 | US 2000-672881 | 20000928 |
| | CN 1293461 | A | 20010502 | CN 2000-128592 | 20000930 |
| PRAI | JP 1999-279790 | A | 19990930 | | |
| | JP 1999-375345 | A | 19991228 | | |

AB The present invention provides a gel **electrolyte** cell including a **nonaq. electrolytic** solution containing lithium-containing **electrolyte** salt solved in a **nonaq.** solvent and made into a gel state by a matrix polymer, and the gel **electrolyte** contains vinylene carbonate or derivative thereof in the amount not less than 0.05 wt% and not greater than 5 wt%. This gel **electrolyte** exhibits an excellent chemical stability with the neg. electrode, strength, and liquid-retention characteristic. This gel **electrolyte** enables to obtain a gel **electrolyte** cell satisfying the cell capacity, cycle characteristic, load characteristic, and low-temperature characteristic.
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** gel **electrolyte**
IT **Battery electrolytes**
Gels
(gel **electrolyte battery**)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(current collector; gel **electrolyte battery**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 872-36-6, Vinylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25067-61-2, Polymethacrylonitrile 25322-68-3, **Peo** 25322-69-4, Polypropylene oxide 90076-65-6 113066-89-0, Cobalt lithium nickel oxide Co0.2LiNi0.8O2 132843-44-8
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)
IT **96-48-0**, γ- **Butyrolactone** 452-10-8, 2,4-Difluoroanisole 7782-42-5, Graphite, uses 167951-81-7
RL: MOA (Modifier or additive use); USES (Uses)
(gel **electrolyte battery**)
IT **96-48-0**, γ- **Butyrolactone**
RL: MOA (Modifier or additive use); USES (Uses)
(gel **electrolyte battery**)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:592491 HCAPLUS
DN 133:196001
TI Gel **electrolyte battery**
IN Shibuya, Mashio; Goto, Shuji
PA Sony Corp., Japan
SO Eur. Pat. Appl., 21 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 1030398 | A1 | 20000823 | EP 2000-102764 | 20000210 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2000243447 | A2 | 20000908 | JP 1999-41456 | 19990219 |
| | US 6465134 | B1 | 20021015 | US 2000-499448 | 20000207 |
| | TW 494592 | B | 20020711 | TW 2000-89102212 | 20000210 |
| | CN 1267926 | A | 20000927 | CN 2000-108303 | 20000218 |

PRAI JP 1999-41456 A 19990219

AB A gel **electrolyte** comprised of a **nonaq.** **electrolytic** solution immersed in a matrix polymer, in which ion conductivity of a solvent is improved and superior cyclic characteristics are achieved. To this end, the gel **electrolyte** includes an **electrolyte**, a matrix polymer and a **nonaq.** solvent. The **nonaq.** solvent is a mixed solvent of ethylene carbonate (EC), propylene carbonate (PC) and γ- **butyrolactone** (GBL). The **nonaq.** solvent is of a weight composition in an area in a triangular phase diagram (EC, PC, GBL) surrounded by a point (70, 30, 0), a point (55, 15, 30), a point (15, 55, 30) and a point (30, 70, 0). A gel **electrolyte battery** employing this **electrolyte** is also disclosed.

IC ICM H01M010-40
ICS H01M006-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery** gel **electrolyte**

IT **Battery electrolytes**
Secondary **batteries**
(gel **electrolyte battery**)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(gel **electrolyte battery**)

IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2 113066-91-4, Cobalt lithium nickel oxide Co0.8LiNi0.2O2
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)

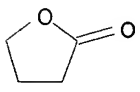
IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride 25322-68-3, **Peo** 25322-69-4, Polypropylene oxide 90076-65-6
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(gel **electrolyte battery**)

IT 100-66-3D, Anisole, fluoro derivative
RL: MOA (Modifier or additive use); USES (Uses)
(gel **electrolyte battery**)

IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(gel **electrolyte battery**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

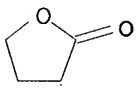
AN 2000:144320 HCAPLUS

DN 132:183114

TI **Nonaqueous electrolyte batteries**
IN Yoshihisa, Hiroyoshi
PA Yuasa Battery Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2000067916 | A2 | 20000303 | JP 1998-241440 | 19980827 |
| PRAI JP 1998-241440 | | 19980827 | | |

AB The **batteries**, containing Li intercalating carbonaceous anodes, use Li2CO3 saturated **electrolyte** solns. or solid **electrolytes.**
IC ICM H01M010-40
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery electrolyte** lithium carbonate; **battery** lithium carbonate satd **electrolyte**
IT **Battery electrolytes**
(**electrolyte** solns. and solid **electrolytes** saturated with lithium carbonate for secondary lithium **batteries**)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. and solid **electrolytes** saturated with lithium carbonate for secondary lithium **batteries**)
IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 14283-07-9, Lithium fluoroborate 25014-41-9, Polyacrylonitrile 25322-68-3, **Peo**
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. and solid **electrolytes** saturated with lithium carbonate for secondary lithium **batteries**)
IT 554-13-2, Lithium carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solns. and solid **electrolytes** saturated with lithium carbonate for secondary lithium **batteries**)
IT **96-48-0**, γ- **Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. and solid **electrolytes** saturated with lithium carbonate for secondary lithium **batteries**)
RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L42 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1989:518216 HCAPLUS
DN 111:118216
TI Solidification of **nonaqueous electrolyte** solutions
IN Watanabe, Masashi; Kajita, Hiroyuki; Kumada, Yasuyuki
PA Sumitomo Chemical Co., Ltd., Japan; Meisei Chemical Works, Ltd.
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 01112667 | A2 | 19890501 | JP 1987-269056 | 19871023 |
| PRAI | JP 1987-269056 | | 19871023 | | |

AB A **nonaq. electrolyte** solution is solidified by absorbing the solution into a highly water-absorbable mono- or poly-isocyanate-modified **PEO.** The solidified **electrolyte** has high elec. conductivity and is useful for Li **batteries** and electrochromic devices, etc. Thus, Sumikagel R 30 R was uses for the solidification of a LiClO4/γ- **butyrolactone electrolyte.**

IC ICM H01M006-18
ICS C08G018-48; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76

ST solid **electrolyte** modified **PEO**; lithium **battery electrolyte** solid; lithium perchlorate modified **PEO electrolyte**; electrochromic device solid **electrolyte**

IT Optical imaging devices
(electrochromic, cyanate-modified **PEO** absorbent for solid **electrolytes** in)

IT **Batteries**, secondary
(solid-**electrolyte**, cyanate-modified **PEO** absorbent for **nonaq.** lithium)

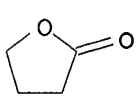
IT 117989-91-0, Sumikagel R 30R
RL: USES (Uses)
(absorbent, for **nonaq.** lithium perchlorate **electrolyte** solns., for lithium **batteries** and electrochromic devices)

IT **96-48-0**, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
RL: USES (Uses)
(**electrolyte** containing lithium perchlorate and, cyanate-modified **PEO** absorbent in, for lithium **batteries** and electrochromic devices)

IT 7791-03-9, Lithium perchlorate
RL: USES (Uses)
(**electrolyte, nonaq.**, cyanate-modified **PEO** absorbent for, for lithium **batteries** and electrochromic devices)

IT **96-48-0**, γ- **Butyrolactone**
RL: USES (Uses)
(**electrolyte** containing lithium perchlorate and, cyanate-modified **PEO** absorbent in, for lithium **batteries** and electrochromic devices)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



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